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Followers to leaders
A look at 3M's innovative IT leadership training. **73**

Roads to the top
Three leading CIOs reflect on their paths to glory. **95**

The NT factor
Even those who haven't gone over to NT Server feel its shadow. **77**

COMPUTERWORLD

The World's Technology Newspaper
www.computerworld.com
December 14, 1998 • Vol. 32 • No. 50 • $4/Copy

Pay, hot tech block IT vets

▸ *Current skills OK; future adaptability at issue*

By Barb Cole-Gomolski

COMPANIES MAY say they value older IT workers for their loyalty and knowledge, but there's definitely age discrimination, according to 41% of respondents to a *Computerworld* survey of 203 IT managers.

In fact, despite the continuing information technology labor shortage, there seems to be a paradoxical view of IT workers over 40. On the one hand, users interviewed and surveyed by *Computerworld* said older workers are more disciplined and well-versed in the technologies most in demand in their organizations today (see chart). But on the flip side, perceptions that older workers lack the hot skills that soon will be in great demand — and are more costly, less motivated and less flexible — work against them.

"Most companies would love to hire a 45-year-old IT person," said David Cowen, a principal at Fanning Technical Search Inc., a New York-based IT recruiting firm, but "skills are driving the market." A lot of workers that age have been maintaining legacy applications, and their skills aren't up-to-date, he added.

So although older IT workers

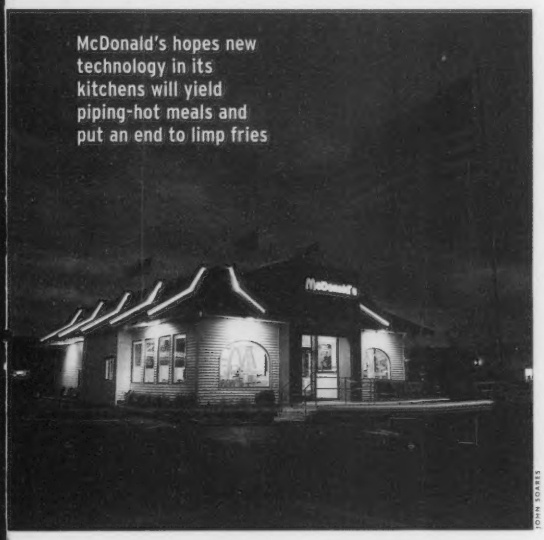
IT vets, page 110

GUESS WHO HAS THE SKILLS YOU NEED?

The top four skills most in demand at companies:	The top four skills that managers say give older employees an advantage over younger ones:
Networking/LAN	Databases
PCs/PC applications	Operating systems
Databases	Year 2000
Operating systems	Networking/LAN

Base: Survey of 203 IT managers who are responsible for IT hiring

Source: Computerworld Information Management Group, Framingham, Mass.



McDonald's hopes new technology in its kitchens will yield piping-hot meals and put an end to limp fries

JOHN SOARES

FALLEN ARCHES

▸ *McDonald's IT plays catch-up with rivals*

By Kim S. Nash

FACING STAFF CUTS for the first time in its 43-year history and a customer base tired of soggy buns and fries, McDonald's Corp. is applying technology to fix some serious business problems.

But key business factors — including reluctant franchisees and a low-tech corporate culture — are working against it.

It isn't that McDonald's, which sold $33.6 billion worth of hamburgers, fries and Beanie Babies last year worldwide, doesn't have a plan. It does — dubbed Made For You.

Equal parts technology, crew retraining and kitchen reorganization, Made For You was introduced in March as a way to get hotter, fresher food to hungry customers.

McDonald's, page 24

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Java upgrade dismissed as still too slow

By Carol Sliwa

SUN MICROSYSTEMS INC.'s Java 2 software — launched at last week's Java Business Expo — promises to improve the 3-1/2-year-old language's performance.

But many developers expressed doubts that Java 2 — formerly known as Java Development Kit 1.2 — will provide the speed boost they need. What they really want is the HotSpot technology that Sun has been talking about for al-

Java upgrade, page 111

E-retailers adopt chat to connect with buyers

By Sharon Machlis

"MAY I HELP YOU?"

That electronic refrain will be popping up at an increasing number of Internet stores next year, as many retailers begin to use "chat" technology for real-time Web customer service.

That's a dramatic shift from a year ago, when many retailers dismissed the concept as either unwieldy or not urgent enough to warrant information technology staff attention.

1-800-Flowers Inc. rolled out a system in September, and consumer electronics store J & R Electronics Inc. began to use text-based chat for customer service last week. Among those

E-retailers, page 16

☞ A **Palm in the hand** is worth plenty **in the bush.**

PIOTR JAKS

Two South African trackers – who **don't read or write** – are using **PalmPilots** to trail **wild animals** and monitor their behavior. And the software they use could find a place in business.

Servers & PCs, page 69

Developer Louis Liebenberg (center) with James Minye (left) and Karel Bernardie

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Sears' Bernie Bartelli hasn't seen a grinch in retail IT since 1994, but he's ready. **Corporate Strategies, page 47**

A reporter finds out the hard way that fingerprint scanners can make life hard for welfare cheats. **In Depth, page 89**

Dr. Daniel Carlin is about to sign contracts to advise traveling executives and expatriates abroad. **Enterprise, page 59**

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EXECUTIVE Briefing

News summary for senior managers

■After two false starts, 3M Co. is finally getting its IT staff to cut "Mother Mining's" apron strings and begin to act like leaders. Its experience shows that committed coaches and executives can start to develop leadership qualities, if they provide an inspiring vision and values, steady commitment and ongoing education and dialogue. Page 73

■Many IT organizations discriminate against job candidates over 40, despite the lack of skilled workers. Most say they value older techs' experience and discipline but doubt their creativity and ability to make the leap to bleeding-edge technology. Young recruiters pass on older workers, who are reluctant to take "sweatshop" IT jobs. Page 1

■The version of R/3 that SAP tailored for apparel makers is making some of its footwear customers chafe. Shoemaker Bruno Magli took five months longer than planned to roll it out, delaying electronic ordering system upgrades. Manufacturer Justin Industries saw boot shipments drop until manual work-arounds solved bottlenecks. Reebok's rollout is slow, but under control. Page 4

■Bill Gates dared the Justice Department to put him on the stand last week, while South Carolina dropped its part of the prosecution. Out of court, Microsoft is responding to user complaints that its Windows Terminal Server is too expensive, but only by making it cheaper for home-based users to log in. Page 8

■Meet Vivian Stephenson, Barry X. Lynn and Margaret "Lyn" McDermid. These CIOs say that what has allowed them to go further, faster than their peers isn't technical skill but an eye for people, for vision, for collaboration and for business. Page 95

■Temp and contract workers pose a problem for IS, especially in dealing with the IRS. But there are ways to successfully employ contract workers. Some include not offering them benefits, requiring them to advertise and collecting documents proving they're in business for themselves. Page 47

■Trucker J. B. Hunt asked its data warehouse what was causing so many accidents and found that it wasn't paying people enough to keep the experienced ones around. Raises cut accident rates dramatically. Page 47

■In the AOL/Netscape deal, what's of most concern to business customers is that Sun Microsystems Inc. will take charge of the corporate software part of the business, says one expert. This Harvard Business School professor and author of a book on Netscape predicts AOL will eventually sell that unit. Page 51

■Sporting goods retailer REI has opened an online outlet store to supplement its main site with discount items. It will apply lessons it learned on its main site, which may soon make money. Page 51

Online this week

QUICK STUDY

thisweek

Integrated Services Digital Network

ISDN

COMPUTERWORLD

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Shoemakers wrestle with SAP projects

▸ *Early users of R/3 version run into problems*

By Craig Stedman

THE PAST FEW months have been a bumpy ride for two of the first three users to install a new version of SAP R/3 tailored to apparel and footwear companies.

The U.S. subsidiary of Italian shoemaker Bruno Magli just went live with the SAP AG software last week, five months later than planned. Setting up R/3 to handle a custom-made shoe business took longer than expected for Bruno Magli USA, which had to postpone upgrades of its electronic-ordering and store point-of-sale systems because of the SAP delays.

An executive at Justin Industries Inc. said the Fort Worth, Texas, manufacturer's fourth-quarter financial results will be hurt by problems its footwear division has had getting the SAP software to work with another vendor's warehouse management system.

The difficulties caused a sharp drop in boot shipments during October and November, said Richard Savitz, vice president of finance at Justin. Shipments are back to normal, but only because of manual work-arounds and increased head counts in the company's warehouse, he added. Savitz said Justin is having problems "on both sides" of the software divide.

The start-up pains felt by Justin and Bruno Magli coincide with problems that some grocery businesses are having with a retail version of R/3 [CW, Dec. 7]. Together, their experiences are evidence of how complex it can be to fit enterprise resource planning applications such as R/3 into new industries that have unique data processing needs, said David Dobrin, an analyst at Benchmarking Partners Inc. in Cambridge, Mass. "I'm sure there are two sides to all these stories, but it's hard to build software for some of these industries," he said.

WORTH THE PAIN

Both footwear companies said they still expect the problems to be outweighed by the benefits of installing R/3, such as improved sales forecasting and a reduction in the amount of time it takes to turn orders into shipments.

"I think we will be successful, but it's just going to take a little more time and effort than we expected," Savitz said. The system problems hopefully will be resolved before the end of March, he added.

Henry Cadmus, director of operations and SAP project manager at Bruno Magli USA, said the apparel/footwear version of R/3 was running relatively smoothly last week. But he noted that the Carlstadt, N.J., company shipped some shoes ahead of schedule two weeks ago to reduce the strain on R/3.

"We're not out of the woods yet," Cadmus said. "We're going very gingerly right now, but we're still alive."

SAP, which has its U.S. headquarters in Newtown Square, Pa., declined to comment other than to say it's "working side by side with Justin" to fix the problems there.

> **"We're not out of the woods yet. We're going very gingerly right now, but we're still alive."**
> **– Henry Cadmus, Bruno Magli**

The Apparel Footwear Solution, an add-on to core R/3, became available in April. SAP had to develop the new functionality so that R/3 could handle the categorization of apparel and footwear products in multiple dimensions, such as size, width, color and the quality of materials used.

Reebok International Inc. was the first company to go live with the new software in August, initially in its golf shoe division. The Stoughton, Mass.-based footwear company this week plans to also start using R/3 to process orders from some of its international subsidiaries and distributors.

The SAP applications are performing "within expectations," said Peter Burrows, Reebok's chief technology officer. "There is stuff that hasn't worked exactly the way we wanted, but we're working our way through that," he said. □

& Users give SAP's data warehousing software mixed reviews. Page 65

SIZED FOR R/3

SAP's apparel/footwear software includes these features:

- Multidimensional grid for tracking color, size and other product details
- Systems for allocating inventory and scheduling deliveries to retailers
- Sales order processing via phone, fax, EDI or the Internet
- Analysis tools for use in assigning orders to contract manufacturers
- Module that tracks the packaging requirements of different retailers

Boole pricing expected to rise

▸ *Expert: Renegotiate before prices change*

By Jaikumar Vijayan

CORPORATIONS USING Boole and Babbage Inc.'s software should try to renegotiate their existing software license agreements to head off possible price increases, an analyst said.

That's because BMC Software Inc.'s planned purchase of Boole could lead to software price increases for certain mainframe license categories after the acquisition, according to a recent report by Meta Group Inc., a consulting firm in Stamford, Conn. (see chart).

"The idea is to try to get as much as possible of what you liked about the old situation when negotiating a new deal," said Jim Lackey, a software configuration manager at Information Systems Management Corp. in Burnaby, British Columbia.

The company provides information technology services to the British Columbia government. Customers planning new purchases of Boole software may be in the best position to negotiate long-term price protection on all existing software licenses.

Others should quickly try to negotiate fixed-price deals on existing Boole software when they enter long-term license agreements with BMC after the merger, said Mike Egan, the Meta analyst who wrote the report.

"Either way, just don't sit back and wait for the bell to ring. . . . It will ring, and it is going to keep [users] up late" if they aren't prepared for the price hikes, Egan said.

EXPECTATIONS

BMC Software announced plans early last month to acquire Boole for $900 million. The merger is expected to give Boole users a broader selection of systems management software and middleware to choose from.

But BMC's reputation for higher prices [CW, Nov. 9], plus the blending of the two vendors' licensing models, could mean higher costs for users of Boole's mainframe software and tools.

At the British Columbia IT contractor, Lackey said he's concerned about the price-hike speculation. For the time being, the company is continuing to treat BMC and Boole as rivals — to see if the impending merger can be leveraged to get better deals from either vendor.

"If there is in fact going to be a [price] hike after the merger, we may have to review the competitive environment" for alternative vendors, Lackey said.

"It's hard to believe that BMC is going to be able to move existing [Boole] software at much higher prices," said Robert Paceley, a senior system programmer at the Palm Beach County government in Florida.

At the same time, though, customers whose production environments are tightly tied to Boole software may have a hard time ripping out the software. "We are taking a wait-and-see attitude" to how the merger will play out, Paceley said. □

Meta's recommendations for Boole & Babbage users:

- Renegotiate with Boole before the acquisition date if you don't have long-term pricing protection
- Negotiate fixed-price deals with BMC after the acquisition, but before any price hikes, incorporating Boole products into BMC long-term deals
- Seek standard contract protections that limit price increases if Boole is acquired

Feds raise Y2K cost to $6.4B

By Matt Hamblen

THE FEDERAL government last week raised the cost of fixing year 2000 bugs in mission-critical systems to $6.4 billion, up $1 billion from the previous quarterly report.

Still, Clinton administration officials said they were encouraged that 61% of the government's 6,696 systems now are fixed and tested.

That's up from 50% in the last report, which was released in August.

John Koskinen, chairman of the President's Council on Year 2000 Conversion, said the Federal Aviation Administration has fixed more than 90% of its systems and is in the process of testing them.

The latest report lists the following six agencies that aren't making adequate progress: the departments of Defense, Energy, Health and Human Services, State, and Transportation, and the Agency for International Development. □

Correction

A Nov. 16 Review Center feature, "Direct hit: personal computers," misstated some vendor rankings in charts on pages 82 and 84. Hewlett-Packard Co. ranked third among PC makers in "value." In "overall comfort with vendor," Dell Computer Corp. ranked first and HP second. Gateway ranked second in "Compatibility," and "Configurability" scores should have shown Gateway second, Compaq Computer Corp. third and IBM fifth.

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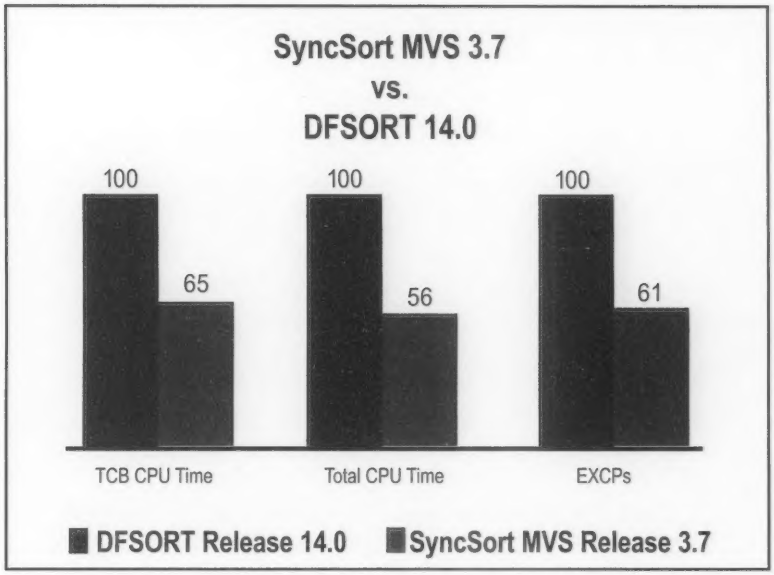

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Deal lets IBM, AT&T do what they do best

By Matt Hamblen and Julia King

HERE'S THE DEAL

- **AT&T buys IBM Global Network for $5B and gets 45,000 customers and 1,300 dial-up points in 850 cities and 59 countries. About 5,000 IBM workers will join AT&T**
- **AT&T outsources the following to IBM for $4B over 10 years: legacy applications processing for billing and orders for long-distance business customers, and management of AT&T data processing centers. More than 2,000 AT&T management employees will be offered jobs at IBM**
- **IBM outsources to AT&T Solutions for $5B over five years a significant part (not exclusive) of IBM's own global networking needs**

AT&T CORP.'s $5 billion deal to purchase IBM Global Network wowed industry analysts and generally left corporate customers happy that a first-rate carrier would take over the vast data network.

The two corporate giants last week also struck two large, long-term outsourcing deals. Thousands of workers will swap bosses so that each company can focus on its core competency — AT&T in running networks and IBM in handling network applications for customers interested in electronic commerce, analysts said (see chart).

All 5,000 IBM Global Network employees now will work for AT&T. "The deal is very positive because we already have a relationship with both companies. This plays real well in terms of our long-term plans," said Rick Ratliff, vice president of information services at VHA Inc., a national health care alliance in Irving, Texas.

VHA is working with IBM to develop an extranet to share information with 20,000 users in 1,000 locations nationwide. It will use AT&T for long-distance voice service.

Noting that both companies have provided reliable services, Ratliff said that since they will be outsourcing to each other, IBM and AT&T might further push the development of converging voice with data.

Seven large IBM Global Network customers said they expect AT&T to honor their contracts.

"I had heard the IBM network was up for sale and was concerned about it, but I'm somewhat relieved it is AT&T, if anybody got it," said David Gruehn, vice president of IS at Gadzooks Inc., a Dallas-based teen-age clothing retailer with 312 stores nationwide. Gadzooks is testing IBM Global Network in 10 stores to perform daily network polling of sales data; it expects to roll it out to 100 stores next year, Gruehn said.

"We have been extremely pleased with IBM's level of service and reliability of the network and would want to make sure that continues before we roll this out to all our stores," he added.

Because of the deal, AT&T also will be able to bolster networking abroad, which Gruehn said "matters to us because we have buyers traveling overseas."

Before BancOne in Columbus, Ohio, merged with First Chicago NDB in Chicago in October, officials of the new entity, Chicago-based Bank One, announced a large network outsourcing deal with AT&T.

Because First Chicago NDB had operations abroad, the expansion of AT&T's global reach will be "helpful to us down the road," said Mike Keller, senior vice president of business management at Bank One. "This deal clearly expands the depth and reach AT&T brings to the table as a network provider."

In addition to giving AT&T the global data networking reach it needed, the deal also "allows IBM to focus more on [its] strengths," said Jeffrey Cohen, an analyst at KPMG Peat Marwick LLP in Chicago.

In the 1980s, IBM built an international data network because no carrier had one and used it to offer services for designing and building systems. □

Novell announces NetWare stepping-stone

By Bob Wallace

NOVELL INC. last week announced NetWare 4.2, a network operating system designed for NetWare users not yet ready to upgrade to Novell's recently released NetWare 5.0 operating system.

NetWare 4.2 is compatible with 5.0 and is meant for users who don't have the time, manpower, need or desire to make what analysts said would be a major upgrade to NetWare 5.0.

"Most people aren't going to move to 5.0 before the year 2000," said Neil MacDonald, an analyst at Gartner Group Inc. in Stamford, Conn. "Novell did this for two reasons: to get a revenue stream from the base that isn't going to 5.0, and because they're in no position to tell their installed base to upgrade or else."

But some Novell users are still working on getting to 4.1.1, or have upgraded to it and plan to stay with it for a while.

"We have our hands full upgrading users from 3.1.1, 3.1.2 and 4.0.1 to 4.1.1," said Jeff Kwasnieski, network manager at the Cleveland Clinic Foundation in Ohio. "I'm positive that there will not be any other immediate upgrade, but 5.0 is a definite possibility for the future." Kwasnieski said he likes 5.0 because of its native IP support, which 4.2 lacks. The clinic already has a 6,000-node NetWare 4.1.1 network.

TOO BIG A JOB

Similarly, "We have no plans to move off [4.1.1], as it has functioned very well for us over the last two years," said Brent Russell, information technology manager at Canadian Occidental Petroleum Corp. in Calgary, Ontario. "We just don't have the manpower or the resources for an upgrade."

NetWare 4.2 will replace NetWare 4.1.1 and IntranetWare, although Novell will continue to offer technical support for them. Russell is not concerned about 4.2 replacing 4.1.1. "Technical support [alone] on 4.1.1 is good enough for us," he said.

Key features of NetWare 4.2

- **Compatibility with NetWare 5.0**
- **ZENworks Starter Pack**
- **Five-user version of Oracle8**
- **Netscape Fast Track Server and Communicator**
- **Perl and NetBasic scripting tools**
- **Year 2000 compliance and euro support**

Source: Novell Inc., Orem, Utah

NetWare 4.2 is year 2000-compliant and supports the euro, said Sean Sanders, a Novell product marketing manager.

Before creating NetWare 4.2, Novell sent customers to other companies for add-ons to the older NetWare version. After seeing the demand, the vendor changed its tune and has combined an array of add-ons with 4.2. They include Netscape Communication Corp.'s Communicator browser and Fast Track Server, a new version of Novell's MultiProtocol Router for wide-area network connectivity and NetWare Connect for supporting remote workers.

Also included in 4.2 is a ZENworks Starter Pack for automating software distribution and desktop PC management and a five-user version of Oracle8, which is Oracle Corp.'s relational database.

NetWare 4.2 is set to ship by year's end at prices starting at $1,095 for five users. □

Andreessen: AOL deal yields E-commerce bonus

With the merger of Netscape Communications Corp. with America Online Inc., the Microsoft Corp. trial and Netscape's embrace of open-source software development, things are busy for Netscape co-founder Marc Andreessen. But Computerworld *staff writer David Orenstein caught up with him last week to discuss the following topics:*

The merger's impact on customers:

We have a lot of details we need to fill in over the next three to four months. We're somewhat limited in our ability to fill those details in because we're going through a regulatory review process.

There's a lot of exciting things we can talk to people about even today that we're putting together — for example, access to the AOL user base in conjunction with the Netscape E-commerce solution, to let you become a major E-commerce player.

We'll not only help you build your online store, but we will also help you find your audience.

The merger's impact on the Microsoft trial:

I think that the Microsoft trial is about acts that Microsoft committed in the past. Microsoft would love to pretend that this is AOL on trial and Netscape on trial and the government on trial — but it's not. Microsoft retains the same monopoly in operating systems that they had before.

"We'll not only help you build your online store, but we will also help you find your audience."
– Marc Andreessen, Netscape co-founder, on the AOL/Netscape merger

Government's role in the industry:

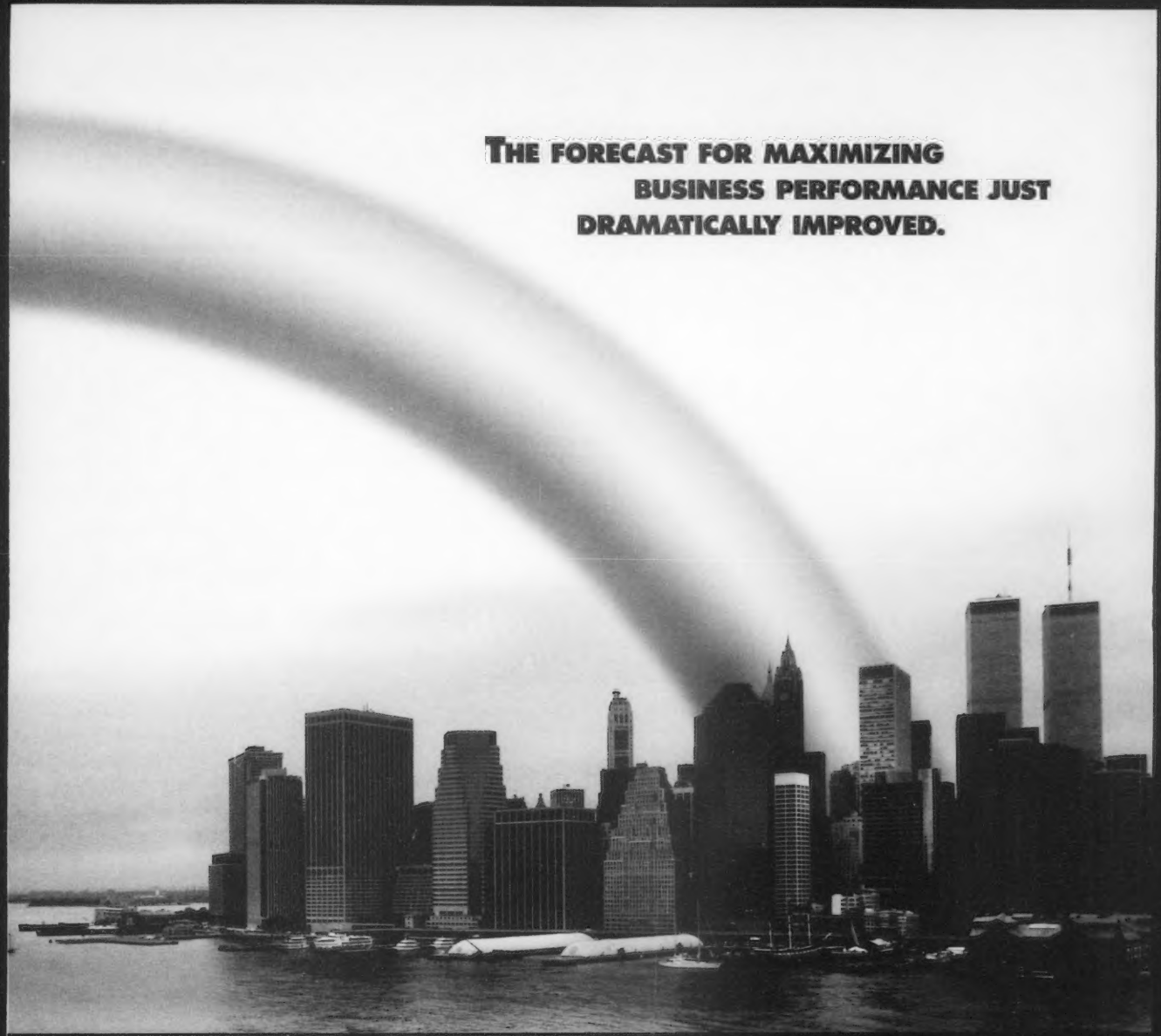
This industry is going to be engaged with government more and more over the next 10 years than over the last 10. There is just no turning back from that.

The spread of open-source software:

It's a model that right now is appropriate where you don't need to make money off the software itself. It's appropriate where you want to get a very large user base, where you want technical standards to propagate, where you want something to exist so that another business that you have can do well.

The advantage of open source is not only can you get things out there, but you can also engage the efforts of thousands of talented people to help you improve it.

I don't think we as an industry know yet whether it makes sense to do it on a broader basis than that. □



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Gates unlikely to testify in trial

▸ Both sides have reasons for not calling him

By Patrick Thibodeau
WASHINGTON

MICROSOFT CHAIRMAN and CEO Bill Gates last week accused the government of being "out to destroy Microsoft" and dared the U.S. Department of Justice to call him as a witness in the antitrust case.

Gates' first public response to the criticism leveled at his 20-hour videotaped performance in the *U.S. vs. Microsoft Corp.* antitrust trial essentially accused the government of sandbagging him by asking ambiguous questions. But even as he urged the government to call him as a witness, Gates probably knows he won't have to testify — and that's frustrating to some users.

THREE TO GO

The government has three witnesses left to call in the Microsoft antitrust trial before Microsoft begins its defense:

Edward Felten, assistant professor of computer science at Princeton

William Harris, CEO of Intuit

Franklin Fisher, MIT economics professor

PROBLEMATIC WITNESS

Putting Gates on the witness stand poses problems for both sides, so it's unlikely to happen, said Hillard Sterling, an attorney at Gordon & Glickson PC in Chicago.

Neither side — for their own tactical reasons — plans to have Gates testify. The government has the tapes, and Microsoft intends to call several of its top executives as witnesses when the defense presents its case, probably early next month. From Microsoft's perspective, "calling Gates would be seriously flawed. Gates has proven to be a poor witness," Sterling said.

By not testifying, Gates is letting the videotapes do all the talking — and that isn't making a good impression on Michael Smith, information systems director at Upsher-Smith Laboratories Inc., a Plymouth, Minn.-based maker of generic pharmaceuticals.

Smith said Gates should testify. "I always kind of imagined or pictured Bill Gates as being a forthright kind of individual," Smith said. But on the tapes, Gates "seems to be very hesitant, stalling and extremely evasive, and that leads one to believe he is not being truthful."

Microsoft's approach also doesn't sit well with Dennis Reedy, vice president of IS at Home Federal Bank in Knoxville, Tenn. Gates should speak for himself about his company, Reedy said. "If he's concerned about the light that these tapes have put him in, I think he can address that directly," he added.

But Mark Napolitan, IS director at L. Knife & Son Inc., a Kingston, Mass.-based distributor of Anheuser-Busch Inc. products, said having Gates testify "wouldn't make any difference for me. I would fully expect that the government would be showing the videotapes out of context."

Each side is limited to 12 witnesses and two rebuttal witnesses they can name at a later date. If Gates appears at the trial, it will likely be as a rebuttal witness. Microsoft's legal team hasn't ruled out the possibility that it may ask Gates to appear in court. □

MICROSOFT VS. DOJ

COURT WATCH

- **South Carolina's decision** to pull out of the Microsoft Corp. antitrust case reduces the number of states involved in the lawsuit to 19. South Carolina Attorney General Charlie Condon said America Online Inc.'s planned takeover of Netscape Communications Corp. showed that "competition is alive and well." Stephen Houck, New York's antitrust chief and the state's lead lawyer, called South Carolina's move "totally inconsequential" to the case. But Houck may be out of a job soon; his boss lost the November election.
- **The government** used Microsoft's 1997 Computer Dictionary in court last week to attack the company's contention that Internet Explorer is an integral part of its Windows operating system and not a separate application. The dictionary defines *Explorer* as a Web browser, and *browser* as an application. Moreover, the dictionary's definition of an operating system doesn't make any reference to Web browsing functions. A Microsoft spokesman said the dictionary was making generic, not platform-specific, definitions.

– Patrick Thibodeau

Some NT Terminal Server users to get new pricing

▸ Applies only to Net and home-based workers

By April Jacobs

IN AN ATTEMPT to placate user complaints about steep pricing on its thin-client offering, Microsoft Corp. said it will provide a single-fee licensing scheme for its Windows NT Terminal Server (WTS) operating system next month — but only for Internet and home-based workers.

Because of the targeted audience of the new scheme — it won't help users on the corporate network, for example — its ability to satisfy most users' complaints is doubtful.

"I would say unequivocally that [the current pricing for WTS] is too expensive," said Bill Bayer, manager of information technology at Komatsu Canada Ltd., an industrial equipment maker in Mississauga, Ontario.

WTS now costs $1,100 — the same as Windows NT Server 4.0. The price includes a server license and 10 client access licenses for file- and print-sharing services. Users have to ante up separately for NT Workstation, which costs about $250 per seat.

Additional access licenses cost about $40 each, and if users want access to non-Windows applications, they must purchase an add-on from Fort Lauderdale, Fla.-based Citrix Systems Inc., which costs several thousand dollars.

John Frederiksen, Microsoft's group product manager for WTS and NT, said the new scheme fills a legitimate gap for customers who may have browser-based applications and home workers.

"This is a dubious pricing structure at best, given the typical thin-client configuration [of WTS users]. A mere 10% of the thin-client software is actually run on thin-client systems, while over 60% are run on standard PCs," said David Friedlander, an analyst at Cambridge, Mass.-based Giga Information Group.

THERE'S A CATCH

The catch, Friedlander said, is that users are forced to upgrade to NT Workstation instead of being able to remain on their Windows 9x desktops.

The new scheme would let a company pay a one-time fee for browser-based and home-based users to connect. Now, those users must have an NT Workstation license, which is nearly impossible for a company to verify. In the new plan, the amount of time those users connect to the server wouldn't be limited, but the number of connections would. The number of connections allowed and the price of the new license have yet to be determined, Frederiksen said. Microsoft expects to formally announce the scheme next month. □

Microsoft starts to fix Java incompatibility

By Kim S. Nash

MICROSOFT CORP. CLAIMED last week that an upgrade to its Java virtual machine (JVM), which is posted at its Web site, supports Sun's Java Native Interface and therefore complies with a court order to make its Java products pass Sun Microsystems Inc.'s compatibility tests.

JAVA LAWSUIT

A federal judge in San Jose, Calif., last month ruled that any Java-based products from Microsoft must comply with Sun's specifications. Supporting Sun's Java Native Interface fulfills that directive, Microsoft said.

The ruling also stated, among other things, that Microsoft must revamp its Java tools so that default programming settings also meet Sun's specifications. The Redmond, Wash., company hasn't done that yet but has 60 more days to do so.

These moves "are one small step" in Sun's larger battle with Microsoft, said Ron Rappaport, an analyst at Zona Research Inc. in Redwood City, Calif.

"I [won't be] convinced that Sun has emerged victorious until [it] can get the court to tell Microsoft to take out its [Java] tools altogether" from the Windows operating system and the Internet Explorer browser, Rappaport said.

Microsoft also announced last week that it had stripped Java functionality from the Macintosh and Unix versions of its Web browser. Users of those operating systems will either use the Java features built in to the operating systems or get a JVM from another vendor. Mac OS has Java built in, and most Unix versions come with Java as well.

Sun sued Microsoft in October last year, saying that the changes Microsoft made to Java, to make it work better with Windows breached the contract between the two vendors.

"It's very important that there be one Java platform and that everyone's in compliance," said Clifford Berg, chief technical officer at Digital Focus Inc., a Java developer in Chantilly, Va., that builds applications for Federal Express Corp., MCI WorldCom Inc. and other corporate users.

PICK A PLATFORM

Microsoft's Windows-specific modifications, Berg said, meant users had to be sure which platforms they would use — Windows or Unix, for example. "But you may want to change from one to the other. That decision should be divorced from application code," he said.

Microsoft made its move at the same time Sun rolled out Java 2, an upgrade to the programming language (see story, page 1). But Microsoft's new JVM isn't based on Java 2 because Sun has refused to ship the upgrade to Microsoft as their contract dispute wears on.

Both sides are expected to submit motions for summary judgment next month, asking the judge to decide the case before a full trial, a Sun spokeswoman said. □

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Citing few new users, Sprint alters on-demand offering

By Matt Hamblen

SIX MONTHS AGO, Sprint Corp. unveiled a plan for a national network integrating voice, data and video into one service. But last week, Sprint said user companies aren't ready for an all-in-one plan.

To encourage interest in its Integrated On-Demand Network (ION), Sprint said it would provide network hubs and software on customers' premises for free. The company also will provide connections to only one part of an integrated network.

ION is a national network combining voice, data and video by extending Sprint's Asynchronous Transfer Mode (ATM) network to each customer site. Customers are able to cut network operating costs by allocating bandwidth for various needs [CW, June 8].

"After listening to customers and analysts, they say they're not all ready to jump on this convergence wheel . . . , yet they are saying they are interested in Sprint ION," said Sprint spokesman Joey Mooring.

Because various networks can be combined, Sprint is offering unified billing based on bandwidth usage instead of separate services such as ATM or frame relay, but Sprint has found customers are also not ready for such a radical change in pricing structures, officials said.

"I think customers will appreciate not having to jump in with both feet" to full ION service, said analyst Cathy Gadecki at TeleChoice Inc. in Midlothian, Va.

Gadecki and other analysts said the latest announcements show the ION services will take time to gain acceptance.

Competing carriers haven't even followed up with competitive responses," Gadecki said.

BOB BARRETT

Hallmark's James Miller says he hopes ION can cut network costs in half

"Sprint is transitioning from ION as a network architecture and a suite of technologies to ION being a suite of services, which is ultimately a new way of doing business with Sprint," said Berge Ayvazian, an analyst at The Yankee Group in Boston. "Those are not easy steps."

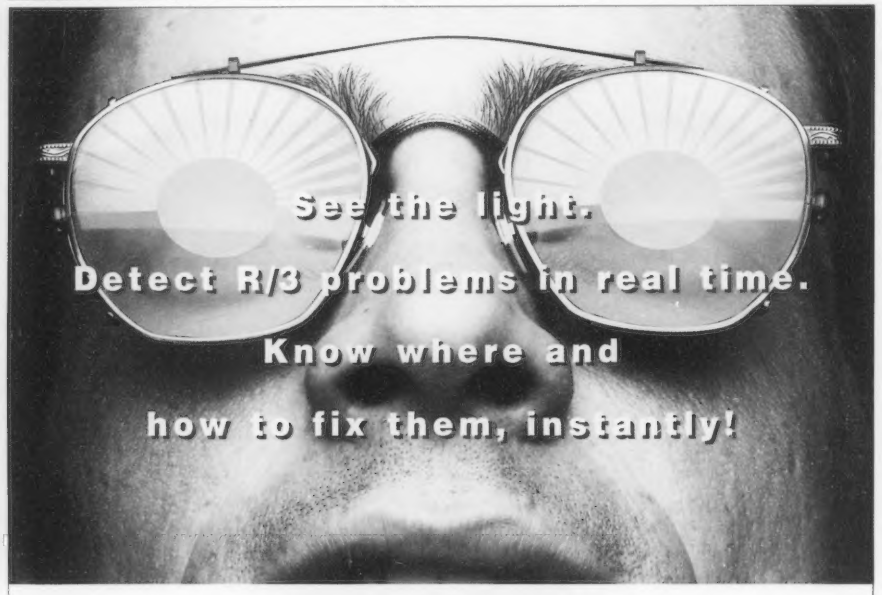
Hallmark Cards Inc. in Kansas City, Mo., has been testing ION for a small portion of its total network for a month at no cost.

"Actually, our installation is working as advertised, so I'm still kind of excited," said James Miller, vice president of information technology at Hallmark. "The faster I get these capabilities, the happier I'll be."

About 12% of Hallmark headquarters' long-distance voice traffic is going through an ION hub. That hub is combined with less than 10% of the headquarters' Internet traffic and several frame-relay connections to Arkansas, Puerto Rico, Mexico and New York, Miller said.

Miller said he hopes in June to cut network costs by half and expand the ability to send graphics and video to thousands of store and plant locations. But so far, Hallmark is in only the first phase of a three-year ION implementation and far from making any estimates of costs or savings.

Next year, Miller hopes to use ION to allow daytime voice traffic at Hallmark's Kansas City headquarters pass through the ION hub and then use the hub to handle nighttime data traffic between Kansas City and a plant in Liberty, Mo. □



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FRANKLY SPEAKING

Y2K: The Big Lie

FRANK HAYES

A NEW REPORT from the federal Office of Management and Budget hit the streets last week and — can you believe it? — it was good news. Of 6,696 mission-critical computer systems in U.S. government agencies, 61% are now year 2000-compliant, up from 50% in August. Better still, of 25 agencies, 11 are now making satisfactory progress on their year 2000 fixes — in August, only nine were.

But of course we *don't* believe it. Why should we? After all, it was just a couple weeks ago that the Defense Department was caught cheating on its year 2000 reports, claiming critical systems were Y2K-clean when they hadn't even been tested.

We don't believe most of the Y2K-compliance statements we've been getting from business partners, either. And we've likely fudged some answers on year 2000 questionnaires that business partners have sent us, too.

Welcome to The Big Lie, year 2000-style: "We're right on schedule, we're doing fine and it won't affect us at all."

Scary, isn't it? Lots of IT people no longer trust anyone with the truth — or trust that anyone will tell them the truth — about their year 2000 condition. What with lawyers, reporters, politicians and regulators all trying to pry out embarrassing information about how far behind we are, a cloud of paranoia and happy talk has descended on the IT world. The Big Lie has taken over.

If you want useful Y2K information, you have to talk – and listen.

And that's very bad news. Because right now we desperately need all the information we can get — good information, real information, meaningful information — about our suppliers' and customers' systems.

On a technical level, we need it so data exchanges, electronic ordering and just-in-time inventory control still work once 2000 arrives. On a business level, we need it so we'll know if they'll still be in business and able to fulfill their commitments to us.

But in this game of liar's poker, we're not likely to get that information. Admitting that (gasp!) things are behind schedule, which might affect how they do business, could have all kinds of legal, financial and political consequences. So lots of organizations just won't do it.

But that doesn't mean you need the information any less. You've just got to find a new way of getting it.

So forget about checklists and questionnaires. Don't waste time digging through Web pages and Securities and Exchange Commission filings. What hasn't been ground into boilerplate bafflegab by lawyers will be too vague and general to be of any use.

Instead, get on the phone and start talking to your partners. Yes, ask how far along they are with their year 2000 efforts. Then ask about the things that really matter. How are their systems going to change? Are they replacing anything major that will reshuffle business processes? What will kick in when?

Tell them what you're getting rid of, and what you're changing. Get into the details — that's the stuff that'll kill you. If you exchange data, make sure any new formats will still mesh. If you're implementing windowing, make sure their date windows are close to yours.

Find out what's giving them fits — and pass along anything useful you've learned that might help. Remember, this isn't a competition — the goal of this game is survival. And the more of your suppliers and customers that survive, the better the chance you'll weather the storm.

Sure, all that chatting will be time-consuming, especially if you've got lots of business partners. But if you want useful year 2000 information now, you're going to have to talk — and listen. Otherwise, all you'll have to work with is the same old Big Lie.□

Hayes is Computerworld*'s staff columnist. His Internet address is frank_hayes@cw.com.*

SHORTS

Aetna deal sets up IT challenge

Aetna Inc.'s plans to acquire Prudential Insurance Company of America's health care business for $1 billion is fraught with technical concerns. The deal, which Aetna announced last week, is the company's third major acquisition in three years, leaving analysts concerned about the Hartford, Conn.-based company's ability to integrate Prudential's information systems along with those of U.S. Healthcare and NYLCare, the health care business it bought from New York Life Insurance Co. in March for $1.05 billion.

Oracle racks up profits

Oracle Corp. said its profits for the quarter ended Nov. 30 jumped 46% over the same period last year to $274 million. Revenue rose more than 25% to $2.05 billion. Revenue for Oracle's database business grew 25% (to $1.5 billion) during the quarter compared with last year, and applications revenue was up 35% to $578 million.

MCI cuts 2,000 jobs

MCI WorldCom Inc. will cut about 2,000 of its 75,000-member workforce as a part of a cost-cutting campaign in the wake of September's merger of MCI Communications Corp. and WorldCom Inc. It expects $2.5 billion in cost savings next year and up to $5 billion in 2002.

Sears names new CIO

Jerry Miller (pictured at left), former vice president of logistics systems at Sears, Roebuck and Co., has been named senior vice president and CIO at the Hoffman Estates, Ill.-based retailer. Miller, 51, succeeds Joseph Smialowski, who recently left Sears to join BankBoston.

NetWare sales boost Novell

Citing strong sales of its directory-enabled servers, Novell reported revenue of $298 million for its fiscal fourth quarter, up 11% from the same period last year. Net income was $42 million, up $35 million from the same period last year. Novell said revenue from NetWare 4.0 and NetWare 5.0 servers was up 16% from the fourth quarter last year to $150 million.

CONTRACT OF THE WEEK

Customer: Internal Revenue Service, Washington

Prime contractor: Computer Sciences Corp. (CSC), Falls Church, Va., and six other companies

Terms: Approximately $8 billion, 15 years

Highlights: In what is reportedly the biggest IT outsourcing deal ever, the CSC team will modernize the U.S. tax system with new computer systems and process re-engineering. Other team members include IBM, Northrop Grumman Corp. and KPMG Peat Marwick.

UN grapples with year 2000

About 120 United Nations member countries met Friday to discuss how to share information on their year 2000 efforts. The UN group was expected to discuss contingencies in the event that major disruptions of critical international services occur. "Many countries have barely begun to consider national responses, and there is as yet no reliable overview for worldwide preparedness," said UN Ambassador Ahmad Kamal of Pakistan.

IT managers ready to switch

When it comes to Microsoft Corp.'s Windows, more information technology professionals would rather switch than stick with it. That's what a survey of 142 attendees at a Giga Information Group conference in La Quinta, Calif., found last week. Almost six in 10 (58%) of the group — described as largely comprised of IT executives — said they would switch from Windows if they had the chance.

PC Docs rejects merger bid

The board of directors at PC Docs Group International Inc. last week rejected an unsolicited merger proposal from OpenText Corp. in Waterloo, Ontario, a vendor of collaborative knowledge-management software. PC Docs Group said the stock-for-stock proposal undervalued the company, and it called the plan "opportunistic." PC Docs Group and its subsidiaries develop and market document-management systems.

SHORT TAKES Tivoli Systems Inc. has licensed Novell Directory Services and will integrate it with its network management software to simplify control of NetWare networks. . . . **Aladdin Knowledge Systems Ltd.** in New York agreed to acquire the Israeli security firm **EliaShim Ltd.** . . . **The Internet Engineering Task Force** approved the distributed authoring and versioning protocol WebDAV, which will let Internet users write, edit, view and save shared documents regardless of which software program or Internet service they're using. . . . **Lotus Development Corp.** in Cambridge, Mass., and **Hewlett-Packard Co.** in Palo Alto, Calif., said they're targeting companies with between 500 and 2,000 users for a messaging migration bundle that will make it easy for corporate users to move to Lotus Domino server.

On one hand, your server operating system is about keeping the network up and running.

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It all starts with great file and print. (In fact, Windows NT Server 4.0 is a 25% faster file server than NetWare 5.) Then, when you're ready, it lets you take advantage of the latest network functions.

What this really means for you is a solid foundation, and the freedom to grow into whatever you need down the line.

CA app predicts bottlenecks

▸ *Uses pattern recognition to unclog net traffic*

By Thomas Hoffman
NEW YORK

COMPUTER ASSOCIATES International Inc. last week unleashed Neugents, neural network software designed to predict server problems and network bottlenecks based on pattern recognition.

Someday, Neugents, which Islandia, N.Y.-based CA has begun to ship with its Unicenter TNG systems management software, may have broader uses. Eventually it could predict, for instance, that sweaters will be the top-selling item in a department store at 4 p.m. on a Tuesday, based on historical purchasing patterns.

But for now, customers can use Neugents to send alerts to network administrators if there's a problem or a potential problem with a Windows NT server, for example. Users of CA's Unicenter TNG software would see an orange light on the screen, indicating that Neugents is making a network performance prediction.

Allegiance's Tony Navarro: Neugents "is what we were looking for"

Customers also can customize their systems to send an alert through a network management console or by integrating it with their help desk software.

The Allstate Group, for example, plans to integrate Neugents into its help desk software so that when there's a problem with a Windows NT server, a message alert will be sent to one of the help desk operators, said Michael Jaslowski, director of enterprise systems management at Allstate.

Pricing for Neugents, which runs on Windows NT servers, starts at $2,000 per server. CA plans to extend the technology to Unix and IBM's OS/390 operating systems early next year, said Charles B. Wang, the company's chairman and CEO.

Although neural networks technology is hardly new, it "seems like a good fit for systems and network management," said Valerie O'Connell, an analyst at Aberdeen Group Inc. in Boston. She said no other vendor in that market uses neural networks.

Neugents beta customers raved about how well the technology performed in early tests. "Three years ago, we tried [unsuccessfully] to develop proactive diagnostics" for a network, said Tony Navarro, manager of systems management at Allegiance Healthcare Corp. in Waukegan, Ill., which began to beta-test Neugents last summer to manage a few NT workstations and servers.

Neugents, he said, "is what we were looking for."

Navarro said Allegiance Healthcare plans to use Neugents to monitor company systems "where there's a financial impact if they go down," such as its just-in-time order processing system.

Another beta customer, Sorrel Jakins, director of server systems at Brigham Young University in Provo, Utah, said he expected some bugs to crop up during Neugents' beta cycle, but that didn't happen. □

Wang sees services role expanding

Computer Associates International Inc. has been in the spotlight recently, both for its push into IT services and for its new Neugents software for predicting server and network problems. Computerworld senior editor Thomas Hoffman caught up with CA Chairman and CEO Charles B. Wang, 54, after the Neugents launch.

CW: What kind of revenue impact are you expecting from customers who freeze new systems installations to maintain their year 2000 readiness?

WANG: We don't see a general meltdown or slowdown in [IT] spending.

CW: What role do you expect CA to have in IT services three to five years from now.

WANG: Services is going to be half of our business in three to five years. [The focus] will be to help our clients deploy our products and be as successful as possible. It's not about racking up billable hours. Tivoli [CA's systems management rival] says that for every dollar you spend on their software, there's $10 to $12 in services costs. That's not right.

Charles B. Wang sees growth in the visualization area of computing in 1999.

CW: So will you help customers install SAP or Oracle financials?

WANG: We can, but the demand is to help them install our systems.

CW: What are the biggest events that will affect the computer industry in 1999?

WANG: The continued expansion of the Web. Predictive management [such as CA Neugents] is going to keep growing. Also, growth in the whole visualization area — how you link to the computer and see what's happening with it.

CW: Any big acquisitions in the works?

WANG: Actually, our strategy has been to grow services internally and acquire strategically where it fits. It's working for us. On the immediate horizon, there's nothing big that's in the offing. □

ERP tools let users modify setups

By Craig Stedman

INSTALLING ERP applications often is only half the battle for users, who then need to worry about keeping the business systems going. And software vendors are starting to recognize that fact.

For example, J. D. Edwards & Co. last week announced plans to deliver tools aimed at making it easier for users with changing business needs to modify their setups of the Denver-based company's enterprise resource planning (ERP) software.

APPLICATION SUPPORT

That follows recent moves by ERP market leader SAP AG and several start-up tool vendors to release products that are meant to help buyers of SAP's R/3 software in areas such as end-user support and application management.

For most ERP users, "all of the emphasis has been on just getting the software going," said Steve Bonadio, an analyst at Hurwitz Group Inc. in Framingham, Mass. "But once you get the damn thing installed, you have to figure out how to keep it running."

Bonadio and other analysts said quick-change capabilities such as those promised by J. D. Edwards' upcoming ActivEra technology are becoming important as more ERP users adopt rapid deployment schemes that leave less time to fine-tune software configurations before they go live.

At OSF Inc., a maker of retail-store shelving and fixtures, the business plans driving its J. D. Edwards OneWorld installation sometimes change before the software is even in place, said Delvin Fletcher, the Toronto company's vice president of information technology.

For example, OSF adds or closes warehouses on a regular basis as customers come and go, Fletcher said. When that happens, he said, the company wants to make the required changes to OneWorld "in bite-size pieces and get it back working again without the users knowing what's going on in the background."

Application flexibility is also a key requirement for Champion Laboratories Inc., an Albion, Ill., maker of automotive air and oil filters that plans to install a combination of OneWorld and J. D. Edwards' older AS/400 software.

Being able to quickly change the company's systems "can make the difference on getting new business" in the cutthroat auto-parts market, said David Mewes, vice president of materials and CIO at Champion. But the company has only two full-time programmers to support its 600 users, he added.

The ActivEra configuration wizards are supposed to let business users change applications on their own, J. D. Edwards said. About 200 wizards will be available this month, and a new user interface supporting them is due in April. □

GM streamlines desktop to gain common environment

By Bob Wallace

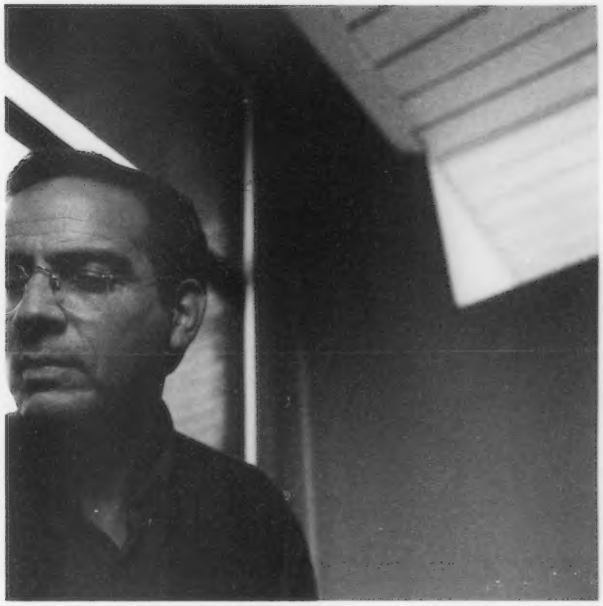
GENERAL MOTORS CORP. last week detailed a program to give 125,000 users worldwide a common desktop environment that features upgraded operating systems, messaging and office suites for their Compaq computers.

"This project will provide us a consistent computing environment around the world and result in very significant savings in service and support," said Dennis Walsh, GM's chief information technology officer.

The project began about five months ago and is planned to be completed in two years.

Although Walsh wouldn't divulge the project costs or its projected savings, he said it will produce a one-year return on investment.

Desktops will be upgraded from Windows 3.1 to Windows 95 and NT, while Office 95 packages will be replaced with Office 97. Users will be moved up to Lotus Notes 4.6.2 and be provided Lotus Domino. GM is testing Domino Version 5.0 now. □



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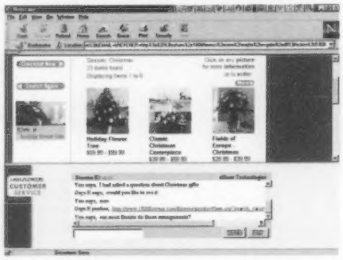
So, when you choose Windows NT Server, you prepare yourself for the changing needs of today's networks.

E-retailers 'chat'

CONTINUED FROM PAGE 1

seriously investigating the technology or planning pilots: Eddie Bauer Inc., Disney Online, United Parcel Service of America Inc. and Delia's Inc., a $200 million-per-year catalog operation in New York that's aimed at teen-age girls.

"I expect two years from now, every big commerce site would have instant chat capability," said Russ Gillam, vice president of electronic commerce at Burbank, Calif.-based Buena Vista Internet Group, which oversees the Disney and ESPN online stores. Disney is likely to have the capability on its site by next Christmas.



The 1-800-Flowers chat service was needed because E-mail can be too slow

The Yankee Group in Boston estimates the market for chat and E-mail Web customer service products — including use by call centers and technical support sites as well as retailers — will be less than $100 million this year but will grow to $650 million by 2001.

IMPROVED TECHNOLOGY

Driving that growth are product offerings that have become more sophisticated, featuring better integration with existing phone and E-mail services. And consumers no longer need to download special software to make a chat request, as new packages take advantage of existing browser capabilities. "The technology has gotten exponentially better," said Jason Friedman, Web site director at J & R Electronics in New York.

Not everyone is convinced that chat can help. Forrester Research Inc. analyst David Cooperstein said the technology is useful for answering quick questions on things such as how to order, but less effective for time-consuming tasks such as offering purchasing advice. "Self-service is better," he said, by making a Web site easy to navigate so consumers can answer their own questions.

HOW MANY PEOPLE?

It's also unclear how much extra staffing might be needed for instant chat. Some say existing representatives can simply switch from E-mail or phone duty; others said they expect that extra people will be required, and they're staffing up.

"We know it's going to require extra staffing, but . . . we welcome that," Friedman said. "We're trying to mimic the retail [store] experience," where salespeople can answer customer queries.

Still, a growing number of companies now see real-time customer service as a potentially useful weapon in the battle to convert visitors into purchasers.

One stomach-churning statistic for online retailers: Two-thirds of all shopping baskets begun by online shoppers are abandoned before they actually place an order, according to a survey of 75 online retailers by Forrester in Cambridge, Mass.

"We think this product category really has a lot of potential to improve our browse-to-buy ratio," said Alex Navarro, a senior vice president at Delia's.

At 1-800-Flowers, time pressure led the company to see chat service as a must-have because E-mail can be too slow. Four out of 10 orders are for same-day delivery; most of the rest are for the next day, said Donna Iucolano, vice president of interactive services.

Even when service representatives answered E-mail queries within one to three hours, customers might not check E-mail again for another day.

"It almost didn't matter how long it took us. We might have missed [their] whole reason to buy," Iucolano said.

Though it's too early to say whether sales are going up because of the system, Iucolano said she already has noticed a decline in E-mail queries. "So far, so good," she said.

The company uses software from EShare Technologies Inc. in Commack, N.Y.

A recent customer, Pauline Berko in New York, said she used the 1-800-Flowers chat service because she couldn't find a particular plant she wants to send a friend for Christmas. She received her answer and said she plans to place an order for a peace lilly. "It was very convenient," she said. □

Intel appeals order to give chip information to Intergraph

By April Jacobs

INTEL CORP. last week formally appealed a U.S. District Court ruling that forces it to supply Birmingham, Ala.-based Intergraph Corp. with key chip prototype information despite its ongoing lawsuit with the workstation maker.

The temporary injunction was issued on grounds that Intel would otherwise irreparably harm Intergraph's business by refusing to do so.

It isn't clear whether the appeal by the Santa Clara, Calif., chip maker will succeed.

Intergraph had sued Intel alleging it unfairly denied access to key information to Intergraph after it tried to enforce patent rights. Intergraph claims that Intel's monopolistic status essentially bars it from withholding chip prototype information that's vital to businesses in the industry that develop products for its platform.

Intel spokesman Chuck Malloy said Intel isn't disputing that it stopped supplying information to Intergraph after that suit was filed but is disputing the basis on which the preliminary injunction was issued. Intel doesn't supply intellectual property to organizations it has pending litigation against, he said.

The Federal Trade Commission said it wouldn't comment on the Intergraph case or the appeal.

However, the suit is one of several that the commission cited in its own antitrust suit against Intel. That suit is scheduled to go before an administrative law judge in February and isn't expected to come to trial before 2000. □

IBM may offer I/O bus to rival Intel approach

By April Jacobs

IBM MAY propose a new peripheral bus standard, dubbed Future I/O, as an alternative to one already in the works from Intel Corp. if negotiations among the chip maker, IBM and other PC makers aren't successful.

An IBM spokesman last week said that the company is still negotiating with Intel but is prepared to move forward if those talks aren't successful. Intel's proposed peripheral bus, dubbed Next Generation I/O and Future I/O, would be successors to the Peripheral Component Interconnect bus used on PCs. The initial use for the new buses would be servers.

Both IBM and Compaq Computer Corp. have voiced concerns for several weeks that Next Generation I/O isn't robust enough to eliminate I/O bottleneck issues, particularly in the 64-bit environment it will be designed to serve. But IBM has provided no details on Future I/O's expected capabilities.

Karl Walker, Compaq's vice president of technology development, said the company is looking at both Next Generation I/O and Future I/O proposals, as well as a "few others" — about which he declined to provide details.

Intel's bus was designed to deliver a maximum speed of 2.5G bit/sec., which is about twice that of today's 33-MHz, 132M byte/sec. PCI bus. Intel plans to have Next Generation I/O in servers in the second half of 2000.

Although Intel and IBM are arguing about Next Generation I/O, both companies have joined other PC makers to develop an interim successor to PCI, dubbed PCI-X, that will quadruple bus speed in systems next year [CW, Nov. 30]. □

HP closes server gap

By Jaikumar Vijayan

HEWLETT-PACKARD CO.'s introduction last week of its V-Class Unix server should give users all the hardware headroom they need for application growth over the next few years.

And it should help the Palo Alto, Calif.-based giant close the performance gap with rivals such as Sun Microsystems Inc. and IBM.

HP's new V2500 is among the performance leaders in the server space, according to Jonathan Eunice, an analyst at Illuminata Inc., a market research firm in Nashua, N.H.

For instance, the new 440-MHz PA-8500 processor on which the server is based matches Compaq Computer Corp.'s 600-MHz Alpha 21264 in raw performance — and is well ahead of mass-volume chips from Intel Corp., according to an Illuminata report.

SCALABILITY

The new servers also offer users a variety of scalability options, said Jean Bozman, a Unix analyst at International Data Corp. in Mountain View, Calif., a sister company to *Computerworld*.

Initial versions of the V2500 will support up to 32 processors. In the second quarter of next year, HP will ship a new version using the Scalable Computing Architecture, which lets users tie four 32-processor systems into one 128-processor, Non-Uniform Memory Access system.

Liz Claiborne Inc. in New York plans to use a 12-processor V2500 to host a massive data warehouse application that contains more than 500G bytes of data and is expected to expand to 1T byte within 18 months. "The best part is we can add processors when we need them," said technical services manager Ralph Fusco. □

Features of the HP V2500

- Based on the 440-MHz PA-8500 chip
- Based on HP-UX 11 operating system
- Supports up to 32 processors
- Can tie together up to four 32-processor systems
- Ships in January

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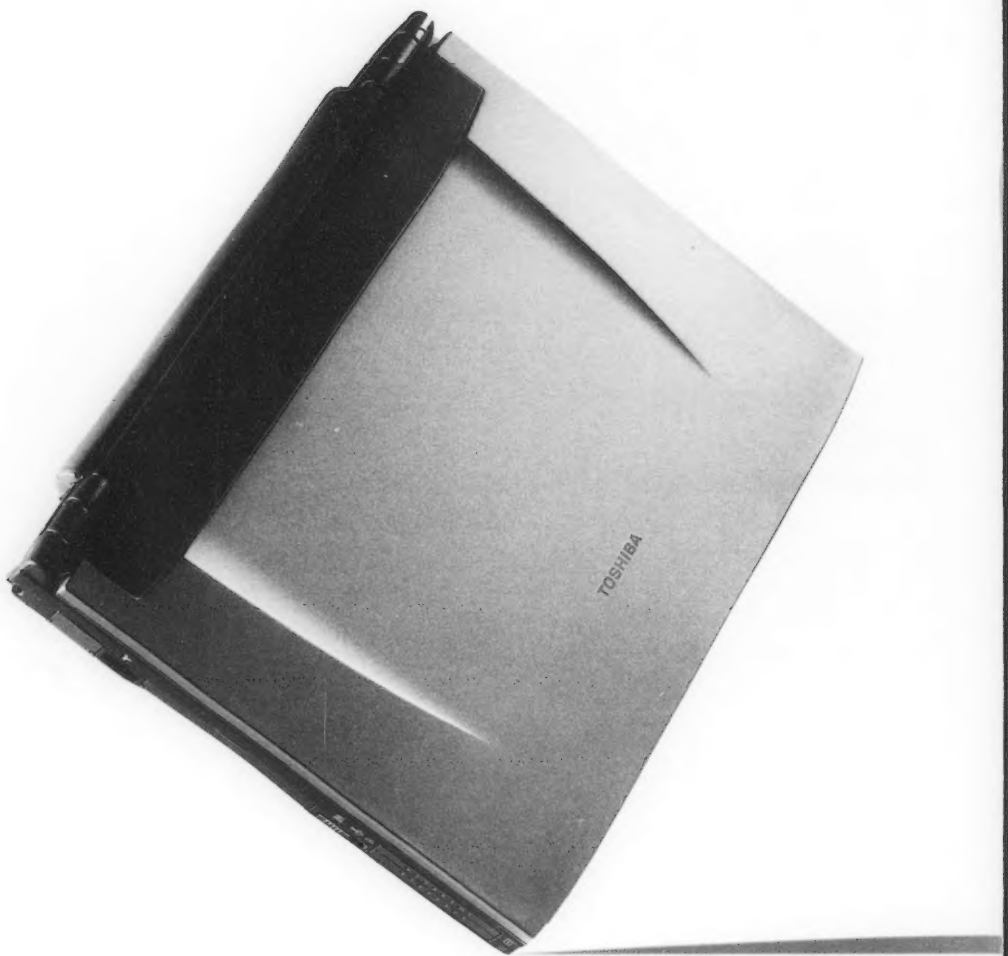

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Flow manufacturing can go against the grain

▸ A lot of up-front work makes for tough install

By Craig Stedman

ERP VENDORS are rushing out new applications that support cost-cutting "flow" manufacturing techniques. But experienced users said getting into the flow takes a lot more than just installing software.

Plant layouts usually need to be completely redesigned for demand-driven flow systems, which replace departmental manufacturing setups with integrated production lines that schedule work only as orders are placed.

Much up-front work goes into getting the production sequencing right so that bottlenecks don't choke the flow of products down the line, users said. Training production managers and workers is another huge job.

"We had a lot of work to do just to get people to start thinking differently," said Jeff Pecon, vice president of the controls and systems product group at Cleveland Motion Controls (CMC) in Cleveland.

CMC, which makes devices that control industrial motors, is expecting big dividends from flow manufacturing. A pilot project with one product line cut manufacturing time from 29 days to two and lowered the percentage of defective items from 21% to 2%, Pecon said.

But he added that CMC doesn't plan to switch its three plants to flow manufacturing until the middle of next year or later, as part of a rollout of Oracle Corp.'s suite of enterprise resource planning (ERP) applications. That's more than two years after work on the conversion got under way.

Flow manufacturing — which evolved out of concepts such as just-in-time production — also can help companies slash inventory costs and even their factory floor-space needs. But the use of packaged software for designing and managing flow systems remains embryonic six months after Oracle became the first major ERP vendor to embrace the idea, said Dave Monroe, an analyst at Plant-Wide Research Group in North Billerica, Mass.

ERP SOFTWARE

A small group of manufacturers have installed flow applications developed by lesser-known vendors such as American Software Inc. Oracle said it hopes to see some initial users start to go live next month.

"Psychologically, it's a huge change for the manufacturing guys," said Bill Schmitt, director of information technologies for global programs at Eaton Corp. "To them, [the flow method] just doesn't make sense at first."

For example, he said, waiting until orders are in hand to schedule production is a complete change from the traditional manufacturing practice of building up inventories to meet anticipated sales.

Bill Swanton, an analyst at AMR Research Inc. in Boston, said another challenge for vendors is convincing users who have cobbled together their own flow systems to switch to the new packaged applications.

FLOW SUPPORTER

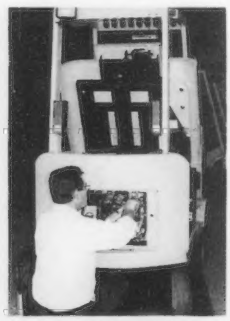
Eaton, a Cleveland-based conglomerate that has been a flow advocate for more than five years, plans to begin installing Oracle's software next summer. The $7.6 billion company now relies on old mainframe and AS/400 manufacturing applications that were modified for flow techniques, Schmitt said.

Packaged software would free Eaton from the headaches of maintaining custom code. But Schmitt said the company might have stayed with its current flow systems if it also weren't rolling out the rest of Oracle's ERP applications.

Advanced Fibre Communications Inc. (AFC), a maker of telephone switches in Petaluma, Calif., turned on its first flow line in May and added a second last month. The initial conversion helped improve on-time delivery rates for that line from less than 50% to 90%, said Mark Sundseth, senior manufacturing engineer at AFC.

But AFC is managing the flow manufacturing lines manually while waiting for American Software to deliver a more user-friendly software based on Windows NT. That could take until June, he added.

Sundseth said plant workers needed "an enormous amount" of training and reassurance before making the switch to flow techniques. "It's really a major undertaking," he said. □



It takes up to a year for forklift-maker NACCO to install flow applications

NACCO caught up in the flow

Like other users, NACCO Materials Handling Group slowly is feeling its way into both flow manufacturing and the software that supports that kind of production.

The Portland, Ore.-based forklift maker, a $1.5 billion subsidiary of NACCO Industries Inc., has been running American Software's flow application at a Northern Ireland plant since early last year. But Sal Tramaglini, CIO at the forklift unit, said he's waiting for add-on software that can manage the huge number of configuration options available to forklift buyers before rolling out the application to it's nine other plants. For now, other flow implementations are managed by homegrown software.

The factories all won't be converted to flow manufacturing techniques until late next year, Tramaglini added. Getting each plant up to speed on flow can take nine months to a year, and the whole project is costing NACCO "millions of dollars," he said. "It's a huge effort, but [benefits from] the lack of inventory go right to the bottom line." — Craig Stedman

SAP to streamline R/3 interface

▸ Plans for fewer windows, improved usability

By Craig Stedman

SAP R/3 customers will get their first look at a friendlier user interface early next year. But they'll have to wait until later in 1999 to actually get their hands on the software.

By the end of March, SAP AG plans to demonstrate a promised revamp of its R/3 application suite that should reduce the number of windows and screens users have to click through to enter orders and run other business transactions.

But SAP said the more user-friendly release will be a follow-up to R/3 4.5, an update of the enterprise resource planning (ERP) software due for general shipment next spring.

For many of the companies relying on R/3, SAP's move to simplify the software will be a sight for sore eyes. "I'd sum up R/3 as highly functional but not very usable," said Dick Weaver, technology manager at Farmland Industries Inc.'s petroleum and crop production business units. "We're spending a lot of time and money to try to attack that problem."

Farmland, a $9 billion, farmer-owned cooperative in Kansas City, Mo., looked at developing order-entry and reporting screens to shield users from R/3. But that would have required highly paid programmers familiar with SAP's proprietary language, Weaver said.

ADDITIONAL NEEDS

For internal reporting, the company now is building a data warehouse that users will access through an intranet application. But Weaver said order-entry "is another kettle of fish" that could benefit from the streamlined user interface being promised by SAP.

Unwieldy user interfaces have been a big problem for companies installing ERP systems [CW, Nov. 2]. And SAP isn't the only vendor trying to make its software easier to use. For example, Oracle Corp. and Lawson Software Inc. have developed simplified applications for occasional users. PeopleSoft Inc. last month said it's working on similar packages.

"But as far as pure look and feel goes, SAP ranks near the bottom," said Jim Holincheck, an analyst at Giga Information Group in Cambridge, Mass. Even after improvements in recent years, R/3 still looks "very much like a mainframe application," he said.

Peter Graf, director of technology marketing at SAP, said the version of R/3 that will be shown off by April is the first release being developed as part of an ease-of-use initiative outlined at SAP's Sapphire '98 user conference [CW, Sept. 21].

In that release, improved usability has been given a higher priority than new functionality, Graf said.

He didn't disclose details, but SAP executives at Sapphire said the company is designing a new, frame-based user interface that should reduce the need to click among different windows.

MJDesigns Inc. is another R/3 customer that has tailored the software to hide "data elements that our users are never going to need to use," said Colby Springer, CIO at the Coppell, Texas-based chain of arts and crafts supply stores.

The company combined a half-dozen R/3 screens into a single "superscreen" for its product buyers and merchandise managers, Springer said. But that was a relatively easy process that took two weeks and didn't require major code changes, he added. □

FERGUSON & KATZMAN

Farmland's Dick Weaver

On R/3: "Highly functional but not very usable"

MOREONLINE

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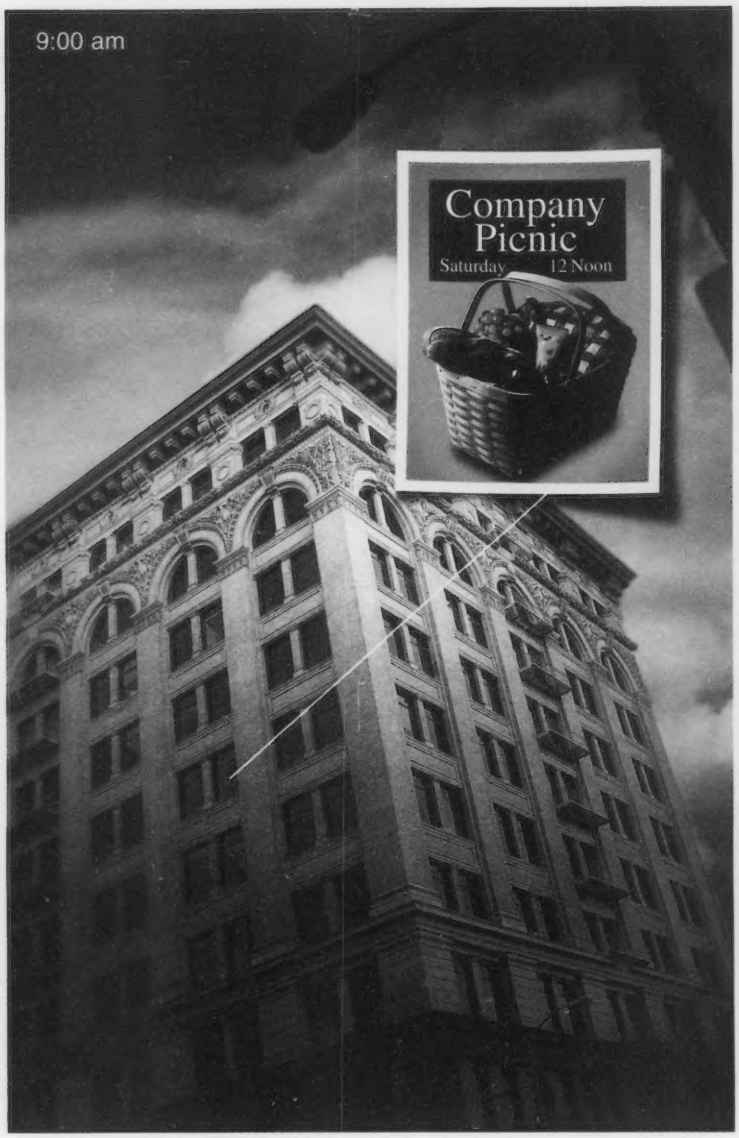

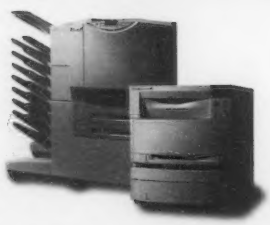

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McDonald's throws IT on the menu

CONTINUED FROM PAGE 1

But the idea behind Made For You isn't new.

McDonald's is playing catch-up to Burger King Corp., Jack in the Box, Taco Bell Corp. and other competitors that have had similar systems installed for years.

Made For You "is a crucial program in the sense that [McDonald's] needs to compete against the rest of the industry," said Dean Haskell, a restaurant financial analyst at Everen Securities Inc. in Chicago. "But we don't expect it to be a sales builder."

> It's "a crucial program in the sense that [McDonald's] needs to compete against the rest of the industry." – Dean Haskell, Everen Securities

And unlike rivals such as Jack in the Box, McDonald's can't simply roll out the new system to all restaurants. Foodmaker Inc., the San Diego parent company of Jack in the Box, owns all its outlets. But about 85% of the 12,400 McDonald's in the U.S. are run by franchisees who can work somewhat independently of the parent corporation.

FRESH START

Made For You calls for new cash register terminals loaded with proprietary software that advises food preparers about how many burgers to flip and how many baskets of fries to dunk in hot oil. The goal is to do away with premade food that languishes under heat lamps (see story at right).

McDonald's has stuck by proclamations that all U.S. outlets — franchisees or not — will have Made For You installed by the end of next year. But the company has just 1,700 systems up now, according to a spokeswoman. "We have a ways to go," she acknowledged.

For that reason, she said, McDonald's declined to discuss Made For You for this article. Nor would any executives talk about any other technology plans, she said. And three local restaurant managers wouldn't talk with *Computerworld* without approval from headquarters in Oak Brook, Ill.

But interviews with people close to McDonald's, analysts and consultants working with the company, as well as a review of public documents and speeches by McDonald's executives, show a company in flux. It's trying to twist away from tradition without upsetting its proven formulas for success.

Top executives, many of whom have recently replaced McDonald's lifers, are trying to repair relations with franchisees. They're attempting to use more advanced information technology, such as Made For You, at the restaurant level. An IT injection at headquarters is also in the works, including a Lotus Notes-based extranet for suppliers and franchisees.

They're doing all that in a distinctly hostile business climate. Sales at McDonald's in the U.S. rose by just 0.25% last year and just 2.6% in 1996.

The company has in the past been loath to put too much technology at the store level because of high employee turnover, which is typical in the fast-food industry, said Dick Adams, president of The Consortium, a group of McDonald's franchisees.

"The only requirement to get a job at a McDonald's is to be 16 or older," he noted.

But tougher still is overcoming a history of not using much IT — anywhere at all.

Midlevel IT professionals at McDonald's "have had a heck of a time trying to sell management on the value of technology," said one technology consultant who has worked with the company for five years. He asked to remain unnamed.

"It's a constant challenge . . . to overcome our organization's inclination to dismiss IT because we're a burger company," acknowledged McDonald's CIO David Weick in a speech at FS/TEC, a food-industry technology conference in Atlanta last month. "IT is not particularly scary or offensive or cumbersome to these folks," said Weick, who joined McDonald's last year from Ameritech Corp. in Chicago. "It's just not one of those familiar things that has made McDonald's successful in the past."

One example: McDonald's didn't get its first E-mail system at headquarters until 1996, said Joe Norton, chief technology officer at McDonald's, in remarks at a May meeting of the Chicago chapter of the Society for Information Management.

"Supply-chain forecasting is one of our biggest business problems," Norton added. That is, there's no fully integrated computer system for tracking and ordering inventory for each McDonald's restaurant, though the company is working on one.

Existing sales terminal software, called Compris, has some of the capabilities needed. But few restaurants use it, and there's no nationwide corporate network connecting all McDonald's outlets.

Some restaurants are networked, but they're mainly the ones owned by McDonald's itself.

"There is a class distinction among the franchisees," explained the technology consultant. "In a lot of cases, [McDonald's] will involve their own stores in new technology projects and spend the money on them and not spend the money on the [other] franchises."

Jack Greenberg, McDonald's president and CEO, tacitly acknowledged such problems at a national meeting of franchisees in March. To help spark acceptance of Made For You, he said, McDonald's would pay up to $12,500 for the cost of outfitting a restaurant with the new technology.

Made For You is Greenberg's baby. But some franchisees report that Made For You is more expensive and harder to set up than he has suggested.

The average restaurant has spent $55,000 to install Made For You, according to an October survey of 250 franchise owners who run about 1,000 restaurants. That's more than double the $25,000 McDonald's estimated. The survey, conducted by The Consortium in San Diego, also found that although Made For You does indeed produce fresher food, customers may have to wait longer than they used to during busy periods — up to 10 minutes. Adams, The Consortium's founder, is a former McDonald's executive and former franchisee and a frequent critic of the company.

The McDonald's spokeswoman said the company has found so far that $25,000 is, indeed, the average cost and disputed the idea of 10-minute waits. "Restaurants with strong basic operations in place can meet or exceed the service standard" of 90 seconds from order to food delivery, she said.

Other franchisees said they're happy with Made For You.

Philip R. Palumbo, who runs 32 restaurants in the San Diego area, said it took him no longer than one day to install the system. Costs ranged from $3,000 to $40,000 per restaurant, depending on whether the site needed a sales terminal hardware upgrade.

POSITIVE RESULT

The result? Palumbo has saved money by cutting waste, he said. Because the crew makes only two sandwiches at a time, less uneaten food gets thrown away. "Before, you'd have six cheeseburgers in the bin and hold them for 10 minutes, then have to throw them out," he said.

He declined to specify his savings in dollar figures but said they're significant: about half of 1% of a full day's sales.

Overall, McDonald's is banking on new technology to help it through rough sales spots in the U.S. and to create uniform operations worldwide. But tension with franchisees remains.

As Weick put it, "While [franchise] autonomy has been helpful for us to be very successful in the past, it has clearly cost us in the area of standardization."□

McDonald's IT: Fast facts

IT staff: 600

Major systems:

- IBM AS/400 minicomputers, MVS mainframes, DB2 databases
- Lotus Notes and Domino Web servers
- Oracle Corp. databases
- Sun Microsystems Inc. Unix servers
- IBM, Olivetti and Panasonic cash register systems
- Lawson Software financial and human resources applications (by late next month)

McDonald's Made For You program: Quieter, sometimes slower

Step into a McDonald's outfitted with the new Made For You food preparation technology, and you'll see some changes.

Remember that shiny, partitioned bin with the overhead heat lamps that held rows of premade burgers? Gone.

Instead, there is a 20- by 20-in. "landing zone" where cashiers pick up just-cooked, piping hot sandwiches.

Remember cashiers yelling back to the grill "Big Mac, hold the pickles?" Gone.

It's quieter now, because orders from the cash register are automatically relayed back to computer monitors suspended from the kitchen ceiling. The grill person and the preparation table crew glance up to read what they have to do next.

Made For You software, which McDonald's built with a third-party developer, also advises the kitchen crew when to make a few extra items, based on the rate of current orders. That feature is called The Anticipator, and managers can set it to custom thresholds that take into account their real-world experience.

If it's payday at the local factory, for instance, you might expect to see lots of families and brisk orders for cheeseburger Happy Meals. Once The Anticipator saw 10 cheeseburgers ordered, it could advise the kitchen to throw extra patties on the grill in anticipation of more orders. Working The Anticipator "took some fine-tuning. But after a month, we had it nailed," said Philip R. Palumbo, who runs nearly three dozen McDonald's restaurants in the San Diego area.

But waiting for that hotter, fresher burger can take some of the fast out of fast food and cause backups at the counter. During a busy lunchtime at a Chicago outlet, for example, cashiers typically took orders from two other people before the first guy got his food.

To avoid that, some restaurant managers bypass the new system and prefabricate sandwiches as they did before, said Dick Adams, president of The Consortium, a group of franchisees. "That's when we switch from Made For You to Made For Someone," he quipped. — Kim S. Nash

Holiday attachments unwrap trouble

▸ *Users prepared for bandwidth-hungry E-mail*

By Roberta Fusaro

CORPORATE USERS said they're ready for the visions of sugarplums, dancing reindeer and executable Santas that may soon appear in their E-mail in-boxes.

Large, holiday E-mail attachments gained notoriety last year. They often are passed among multiple corporate users or saved to users' hard drives. However, the files can eat up network space and bandwidth that might otherwise be used for mission-critical tasks — and they also may carry viruses, analysts said.

Users and analysts said the graphics files really don't pose much of a problem overall, although their volume does build during the countdown to Christmas Day.

MacDonnell Ulsch, a consultant in the technical risk services group at PricewaterhouseCoopers in Boston, said holiday E-mail files cross the line from nuisance to concern if the file has a virus associated with it and if it's creating network bottlenecks. "But most users have the bandwidth to handle them," he said.

For those who don't, vendors such as Trend Micro Inc. and WorldTalk Inc. provide E-mail filtering software that can help pluck out graphics-heavy files. And Dayton, Ohio-based E-mail outsourcer Allegro Inc. last month announced free content-filtering to help companies block the traditional holiday-related AVI and MPEG video files that make the rounds this time of year.

After Jan. 15, the service will cost about $25 per month. Allegro's target users are small to midsize businesses.

Brian Andrews, CC:Mail administrator in the consumer products division at Walt Disney Co. in Burbank, Calif., said the free filter would work best for smaller companies that have a tight rein on their messaging systems. By contrast, Disney's own mail system is sprawling, with more than 65,000 business users worldwide, he said.

Andrews said Disney has no policy against holiday E-mail attachments. He said they haven't posed much of a problem in the past.

Holiday attachments also aren't expected to create a problem at Chevron Co., officials said. Chevron, in San Ramon, Calif., uses a combination of end-user education, corporate policies on the appropriate use of E-mail and firewall software to handle large file attachments, said Marion Weiler, senior messaging technologist at the company. Chevron has 30,000 users worldwide. □

Industry steels for battle between online marketplace sites

By Sharon Machlis

THE STEEL INDUSTRY has a second Internet marketplace with the announcement last week that E-Steel LLC (*www.e-steel.com*) is already in beta tests and scheduled for a full launch in February.

E-Steel follows on the heels of MetalSite (*www.metalsite.com*), launched last summer with a $5 million investment by three major steel companies.

Both plan to bring efficiencies of Web-based selling to the industry, allowing producers to post available goods and letting buyers seek bid requests.

MetalSite, which just added electronic-commerce capabilities this month, said it's open to all quality producers and aims to build an industry community by offering news and other attractions, as well as commerce. However, E-Steel plans to attract business by promoting itself as neutral and not owned by vendors. The project is backed by private investors; a former top executive of U.S. Steel Corp., Reuben Perin Jr., sits on its advisory board.

"They are a [sales] channel; we are a market," said Chris Hanan (chris@e-steel.com), vice president of marketing and business development at E-Steel in New York. "I do believe there is room for two."

Joan Carol Brigham, an analyst at International Data Corp., a *Computerworld* sister company based in Framingham, Mass., said that considering the size of the steel industry, it's possible that two Web sites could attract adequate business. The U.S. iron and steel industry had an estimated $75 billion in sales last year.

E-Steel is working with Computer Sciences Corp. in El Segundo, Calif., to develop its site, which will use electronic-commerce software from Broadvision Inc. in Redwood City, Calif., and database software from Oracle Corp. □

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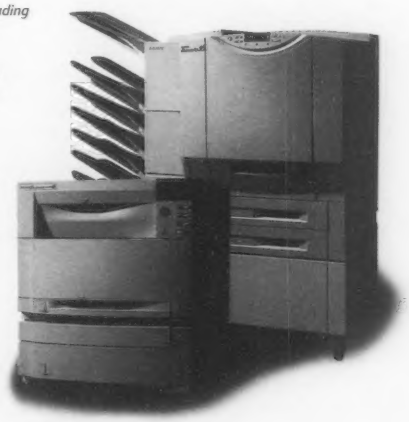

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ISDN

DEFINITION: The Integrated Services Digital Network (ISDN) standard provides the fastest way to access voice and data services over public digital networks. It has high bandwidth speeds, which means it can send a large amount of data in a short amount of time. Its bandwidth speed is 128K bit/sec. to 1.5M bit/sec. ISDN works by separating network overhead from the voice or data traffic. It does that by splitting the capacity of the wire into several independent channels. One channel communicates with the central office switch while the others enable users to make voice calls, conduct videoconferencing and access the Internet or a remote LAN.

Signaling provides a renewed interest

By Mary Brandel

ISDN IS A standard that's been all but asleep in the U.S. for nearly 14 years, but because of our endless need for bandwidth it's finally waking up.

"People are looking for higher bandwidth, and what's available is ISDN," says Claudia Bacco, a senior analyst at TeleChoice Inc. in Dallas.

But bandwidth is only a small part of Integrated Services Digital Network (ISDN). ISDN was designed two decades ago as an international standard with the intent of replacing the "plain old telephone system," otherwise known as POTS. That never happened, but the theory was good — it promised to increase the speed, reliability and flexibility of the analog phone system.

AT ISSUE

Remote workers enjoy better access

The magic behind ISDN lies in its sophisticated signaling capabilities. Signaling is how the caller and the network select services and features. With POTS, signaling flows along the same channel as the voice or data call; this is known as "in-band." But with ISDN, signaling is separated into its own channel, called the D, or delta channel (see terms). This also is called "out-of-band" signaling.

With in-band signaling, "the only thing you could do with the phone was make it ring," says Tom Nolle, president of CIMI Corp. in Voorhees, N.J. But with out-of-band signaling, you can select a variety of services and features — voice, data, videoconferencing, remote LAN or server access — and provide information about the call. Out-of-band signaling also is how ISDN achieves its fast speeds. Signaling is separated onto its own channel, allowing content to flow freely on its own channels.

The content channels are called the B, or bearer, channels (see terms), and ISDN offers at least two of those. The channels can operate separately so that multiple calls, either voice or data, come in simultaneously. Or they can be bonded together to get higher bandwidth.

None of this happens willy-nilly. For one thing, both caller and recipient must subscribe to ISDN in order to enjoy the fastest data service. And "there are rigid performance requirements," says Lisa Pierce, an analyst at Giga Information Group in Cambridge, Mass.

REMOTE WORKERS

Part of the reason for ISDN's renewed interest are falling prices and simplified marketing, but it's also the best choice for corporations seeking optimal bandwidth for remote workers. Branch offices and and retailers also like the D-channel's ability to send a small number of data packets along with its signaling information. Freeing up voice lines is a plus for retailers doing credit-card approvals.

Although it's unclear how long ISDN will remain awake, for now it's an increasingly popular option for high-bandwidth, high-flexibility needs. □

Brandel is a freelance writer in Norfolk, Mass.

ISDN terms

Bandwidth
The amount of data that can be sent through a network connection in a specific amount of time.

B channel
Transports voice and data at 64K bit/sec. With appropriate equipment and services, they can be combined for speeds between 128K bit/sec. (in the case of BRI, see below) and 1.5M bit/sec. (with PRI, see below).

D channel
Provides signaling information (such as service or feature selection) to the central office switch. It operates at 16K bit/sec. (BRI) or 64K bit/sec. (PRI).

Basic Rate Interface (BRI)
A service mostly intended for remote users, branch offices and small businesses. It consists of two B channels and one D channel and offers speeds up to 128K bit/sec. It operates on a single twisted pair of copper wires.

Primary Rate Interface (PRI)
A service intended for midsize and large corporations. It consists of 23 B channels and one D channel and operates at speeds up to 1.5M bit/sec. PRI and BRI are interoperable.

Always On/Dynamic ISDN
With this service, you can maintain a constant connection with the corporate LAN or service provider using the D channel. Data is sent or received by X.25, a popular data transfer protocol, with the D channel's call control packets. One advantage is lower costs because you aren't always being charged B-channel rates.

True or false?

There are many misunderstandings about ISDN. Here's the real story:

ISDN is a service offered by phone companies.

False. ISDN is an international standard that acts as an access mechanism to public digital networks. But carriers refer to it as a service that they provide. ISDN sits on the wire between the ISDN-capable equipment at the business or residence and the phone company's ISDN-capable switch. ISDN provides users with a range of services, including switched digital service for fast Internet access.

ISDN is the fastest transport mechanism that exists today.

True. It is the fastest worldwide standard access mechanism, more than double the speed of most analog modems. Much faster speeds are promised with Digital Subscriber Line service, a way of sending data using modems and copper wires. But ISDN is a more mature, standardized technology that is used worldwide.

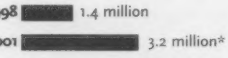
The best thing about ISDN is its speed.

True and false. The speed is a great characteristic of ISDN, but its flexibility is often overlooked. Because the signaling traffic is separate from the voice or data transmissions, ISDN lets users make a voice call and a data call simultaneously, all with one phone line.

Source: Giga Information Group, Cambridge, Mass.

BRI lines are expected to more than double in the next three years . . .

Number of BRI lines in the U.S.



. . . and ISDN availability is at an all-time high

Top 50 U.S. cities with ISDN availability: Almost 100%

Availability in the U.S.: About 70%. Compared with other transport mechanisms, its usage is still minuscule

Percentage of 160 million U.S. phone lines that use ISDN: 1%

**Projected*

Source: Giga Information Group, Cambridge, Mass.

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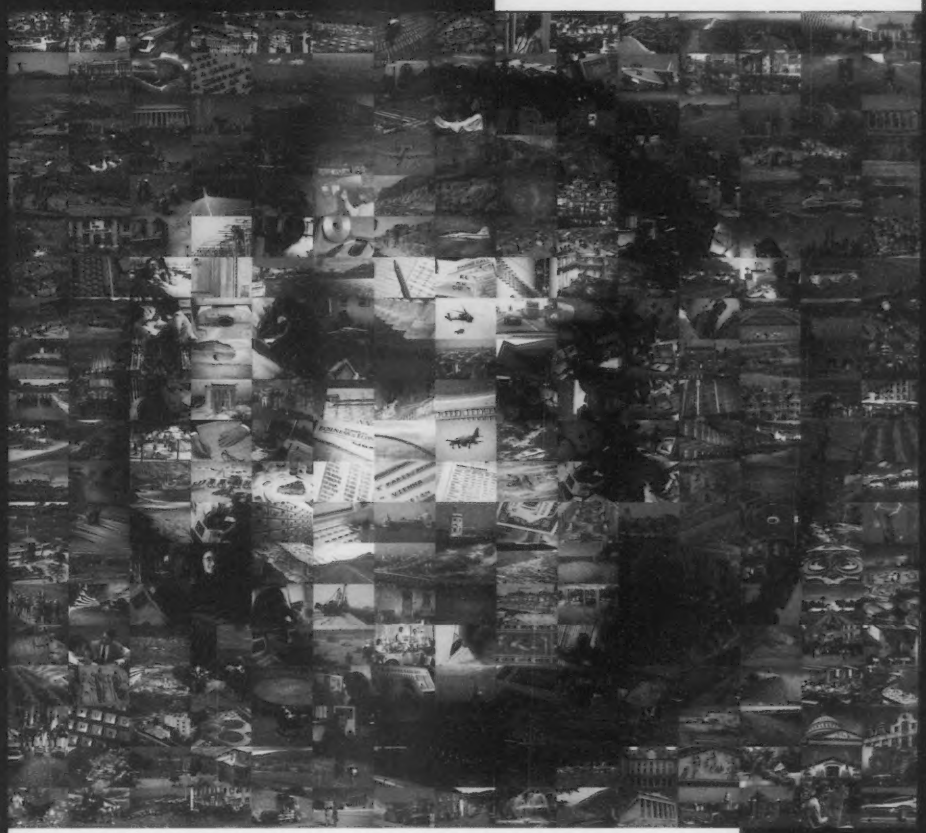

It was one of the most visited Web sites of all time. In all, the France '98 site, powered by software from Sybase, generated over 1.5 billion hits from more than 170 countries. Shoppers purchased World Cup merchandise via an e-commerce store that averaged over 760,000 hits per day. Journalists and staff members relied on an intricate intranet to access valuable, timely information. From the Web to e-commerce to intranets, France '98 was a global success, and one that we can replicate for businesses like yours. With our proven technology, we can create complete Web solutions that enable your company to bring together and distribute mountains of information to provide the competitive advantage you need to achieve your organizational goals. To learn more about the success of the France '98 Web solution and what we can do for your business, visit www.sybase.com/worldcup or call 1-800-8-SYBASE (Ref. CPCW4).

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OPINION

Holiday cheer

It's time, with New Year's drawing close,
To raise a glass and drink a toast
To those whose triumphs, flubs and tricks
Kept our keyboards clicking clicks.

ERP was in the headlines,
Stretching some deployment deadlines.
Its payoff makes you quite exultant,
'Specially if you're a consultant.

A new Web trend sure had us chortling:
Everyone has gone a-portaling!
News, stocks, sports scores, I'm amazed!
Who's got time for work these days?

Here's a present I'd endorse:
Give the gift of open source.
Its low-cost concept resonates
With everyone except
Bill Gates.

What would brighten
Compaq faces?
A DEC stacked full of
cards, all aces.
The gift that Congress
wants to get?
A tax upon the Internet.

The time draws near for Y2K,
Non-event or Judgment Day?
To IT, give a mother lode
Of tools for tracking Cobol code.

I am spam. Spam I am.
I do not like this stuff called spam.
Yet here it is, still more mind-numbing,
Spam — the gift that just keeps coming.

To Gartner, give a .9 rating;
To EBay, stock accelerating.
To Oracle, give some true thin clients;
To IT, Y2K compliance.

To Amazon, give new CDs
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For wouldn't you find some elation
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And next year brings a unique challenge.
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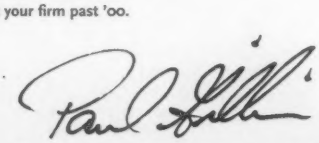

Paul Gillin, *editor in chief*
Internet: *paul_gillin@cw.com*

LETTERS

New generation should fight exploitation of IT pros

I felt I had to comment on Kevin D. Hammon's letter to the editor in the Nov. 16 issue ["The Gen X choice: Quality of life or around-the-clock jobs"]. Good for him and all the other Gen Xers who are putting their personal lives on the same level as their working lives.

I'm not a Gen Xer — far from it. I've been in data processing for over 23 years. In all that time, it's been a constant struggle to make managers realize my family is more important to me than the next unrealistic deadline. Has my career suffered for it? Absolutely. But it was worth it. I have a happy, healthy daughter who knows she can count on me to be there when she needs me.

Maybe this younger generation can bring some sanity back into the world of business. Letters such as those from Mr. Hammon give me hope.

Jim Geisert
Orange, Calif.
jgeisert@beechstreet.com

Week after week, there are articles on the IT shortage. Then there are articles on H-1B visas and exploitation. Then along come articles on discrimination against older workers.

It's time for our foreign peers to refuse to be exploited by low pay. It's time for the twenty- and thirty-somethings to declare that they won't be treated the way their parents were treated. And it's time for all of us in IT to become a strong, united force — politically, socially and economically.

Maybe this generation can bring sanity back to the business world.

We deserve to be treated fairly, which means good pay, respect, investment in our skills and thanks when we make personal sacrifices.

If we don't stick together, we have no one to blame but ourselves for our exploitation.

Rebecca L. Troxell
General Dynamics
ATS CIO Organization
Greensboro, N.C.
rtroxell@gdats.com

Gates as prey, not predator

In response to David Moschella's column, "What Bill Gates won't say," [CW, Nov. 16] here is what Bill Gates should say:

"We compete in an industry that looks for companies to deliver the best products and services at a reasonable cost to the end user. Taking market share away from competitors is the result of consumer choice. The consumers ultimately decide what products they want to purchase. There are threats all around as I write this letter and we proceed with these hearings. For example, just recently, Sun, IBM and Netscape announced major alliances to effectively compete on our landscape."

I wonder what this case is really about? Who is this case really protecting? The last time I checked, all of Microsoft's major competitors were alive and kicking. In fact, they were not only alive, they were all thriving at the expense of taxpayers.

Jack K. Riashi Jr.
Premier Portfolio Advisors
Grosse Pointe Woods, Mich.
JKRiashi@aol.com

More letters, page 41

IBM fan finds happiness without 'insanity' of Wintel world

I had to laugh. The editorial "Hype fatigue" [CW, Nov. 16] sure got to me. For an industry that lives on hype, it's good to see the press finally acknowledging this insanity.

I'm glad I don't live in that world. I work on a state-of-the-art system that's truly 64-bit. It has an integrated relational database, integrated security and 99.9% uptime. It's scalable and supports all industry connectivity standards. And it's priced competitively with Wintel.

So what is this miracle system? IBM's AS/400. Do I sound like a fan? You bet. My life is so much easier than my Wintel brethren's. So lose the fatiguing hype of Wintel and get a system that delivers on its promises today.

Dan McConnell
Blodgett Ovens
Burlington, Vt.
dcmcc@compuserve.com

Computerworld welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

Intranets becoming too much of a good thing

John Gantz

I believe in intranets. You can roll them out across an enterprise in a blink of an eye. Intranets are much simpler than client/server applications. They're the answer to a beleaguered user's prayers.

Of course, I believed in PCs, too, when they first started to enter enterprises in the 1970s, and IT managers tried to stomp them out like roaches. But then PCs *did* overrun our organizations, the world evolved, and we have learned to live with the plague of incompatible device drivers, incomprehensible error messages and systems that break when you try to uninstall software.

So it's possible to get too much of a good thing. And that's where we're headed with intranets. Today, about 50 million employees have access to internal Web-based networks. In five years, that number will be 150 million. The amount of information accessed by intranet users will go from 6T bytes per day to 600T bytes within the next five years — a hundredfold increase.

The honeymoon is over. We now have enough experience to discover the dark side of intranets. The following are some examples:

The growth of intranets will be as political as the proliferation of PCs.

- Intranets are great departmental solutions, and, like departmental applications of yore, they're growing up in islands. This isn't all bad, but there are situations when you want your applications to have a common look and feel, consistent management and common directories.
- Making all this information available to employees doesn't mean they can find it. Universal search tools are rudimentary, and management of meta data is an undefined art. Information grows faster than employees' ability to get at it.
- Getting data *into* the intranets isn't always easy. The biggest impediment is getting employees to cough up personal information for a common data pool. The answer, of course, is to use the latest techniques and tools for knowledge management to corral those googolbytes of information — but because nobody really knows how to do that, we need some short-term solutions.

Here we can take lessons from those IT managers who watched the PC tsunami wash over their companies.

Lesson one. You can't control or stop the proliferation. You can, however, settle on a few items to make a company standard — say, intranet server software, browsers, directories, E-mail systems and authoring tools. Keep it simple. Have alternatives but not too many.

Lesson two. Take the lead in enabling users to roll their own intranets. Classes on authoring and registration management, user groups that address best practices, capacity planning on servers, advice on conducting pilot projects. You know the drill.

Lesson three. Provide a list of subcontractors, training courses, Web developers and other outsourcing groups. That may help you keep some control on user-driven development.

Lesson four. Pick a few of these user-developed applications in which to be an active development partner. You want them to be visible, well-funded and backed by top management. Your goal: glory and praise for *your* department.

Lesson five. Understand the politics. CEOs will want intranets instead of more complex (if more robust and reliable) client/server applications because of their simplicity and the speed of development. If you think an intranet is ill-advised, don't go against it head-on. Nod your head, then find a way to subvert it.

The growth of intranets in our enterprises will be as political as the proliferation of PCs was. And, to paraphrase that great Massachusetts solon, Tip O'Neill, remember that all intranets are local. Keep the users happy. □

Gantz is a senior vice president at International Data Corp., a sister company to Computerworld *in Framingham, Mass. His E-mail address is jgantz@idcresearch.com.*

How to fix Microsoft's predatory practices

David Moschella

Now that it's starting to dawn on people that there's a good chance the Justice Department might actually win its case vs. Microsoft, public discussion has begun to shift toward what sort of legal remedy might be advisable.

That, of course, has always been the tougher question: How sure are we that government intervention won't do our business more harm than good?

Perhaps because of the colossal wealth of both Bill Gates and John D. Rockefeller, or perhaps because of today's ironic reunion of Exxon Corp. and Mobil Corp. — formerly part of Rockefeller's Standard Oil Trust, which was disbanded by the federal government in 1911 — most of the debate has focused on the question of whether, like Standard Oil, Microsoft Corp. should be broken up. Many observers have suggested that Microsoft should be required to divest itself into separate operating systems and applications companies.

To me, that would be a profound overreaction. Whatever illegalities Microsoft may have committed, they are, at best, a close call. Therefore, the goal of any government-imposed remedy should be to tame Microsoft's most troubling predatory tendencies, while not radically dismembering it. Breaking up Microsoft might well increase competition, but the potential loss of product integration poses real risks for consumers.

I believe there's a simpler and safer alternative. We all know the heart of the problem is that Microsoft's ability to bundle features into Windows gives it a huge advantage. The trick is to deal with the situation without turning the company upside down. That can be done with some very simple guidelines:

Whenever Microsoft introduces major functionality such as Internet Explorer, the Windows Media Player, Outlook or FrontPage, it would be asked to formally declare whether it's introducing a separate application program or a new operating system feature. If Microsoft decides that a new function is part of one of its operating systems, that function must be treated as such. That means no separate product name and marketing, no download buttons on non-Microsoft sites, no separate CD-ROM distribution, no press events and no separate tracking of product market share.

Minor improvements or fixes would have to be made just as they are today via online updates and service packs. Major new functionality would have to wait until the next operating system.

However, if Microsoft decides a new function is a separate product, it would be free to use the marketing tactics listed above.

A modest proposal to neutralize Microsoft's modest infractions.

But it would not be able to require that PC makers install the software as part of an operating system license. More important, the pricing (or nonpricing) of this software would become transparent, making it more difficult for Microsoft to conceal any future predatory behavior.

The government oversight needed to monitor such a system would be minimal. Better still, day-to-day decisions would remain with Microsoft, assuring a market-driven environment. Consumers would benefit because Microsoft would still have an incentive to improve and integrate its products, but competition would increase as vendors better understand what they're up against.

It's a modest proposal designed to neutralize Microsoft's modest infractions. It won't make amends for what happened to Netscape Communications Corp., but it might provide a viable path forward. I think it should be tried before more radical notions are seriously considered. Let me know whether you agree. □

Moschella is an author, independent consultant and weekly columnist for Computerworld. *His E-mail address is dmoschella@earthlink.net.*

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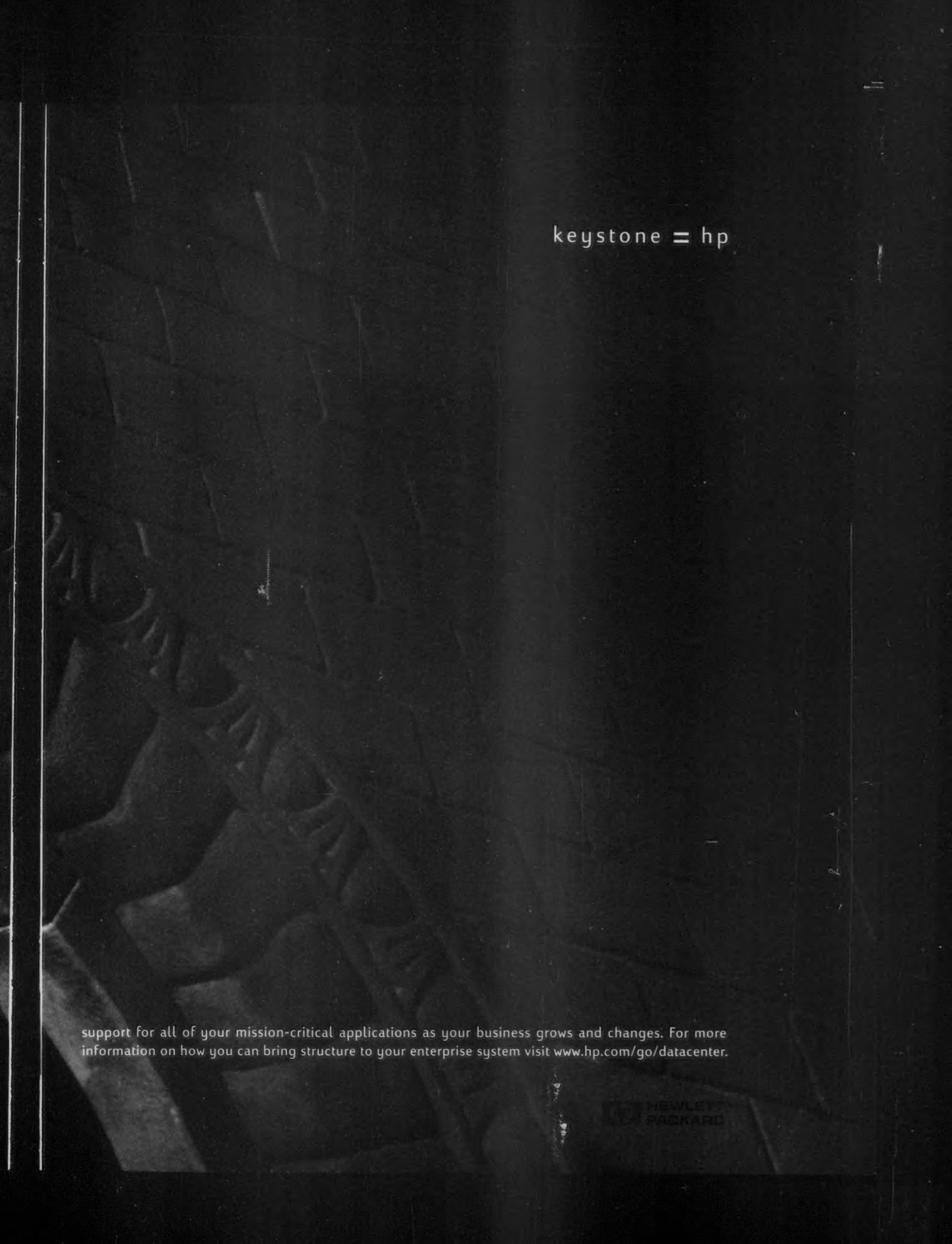
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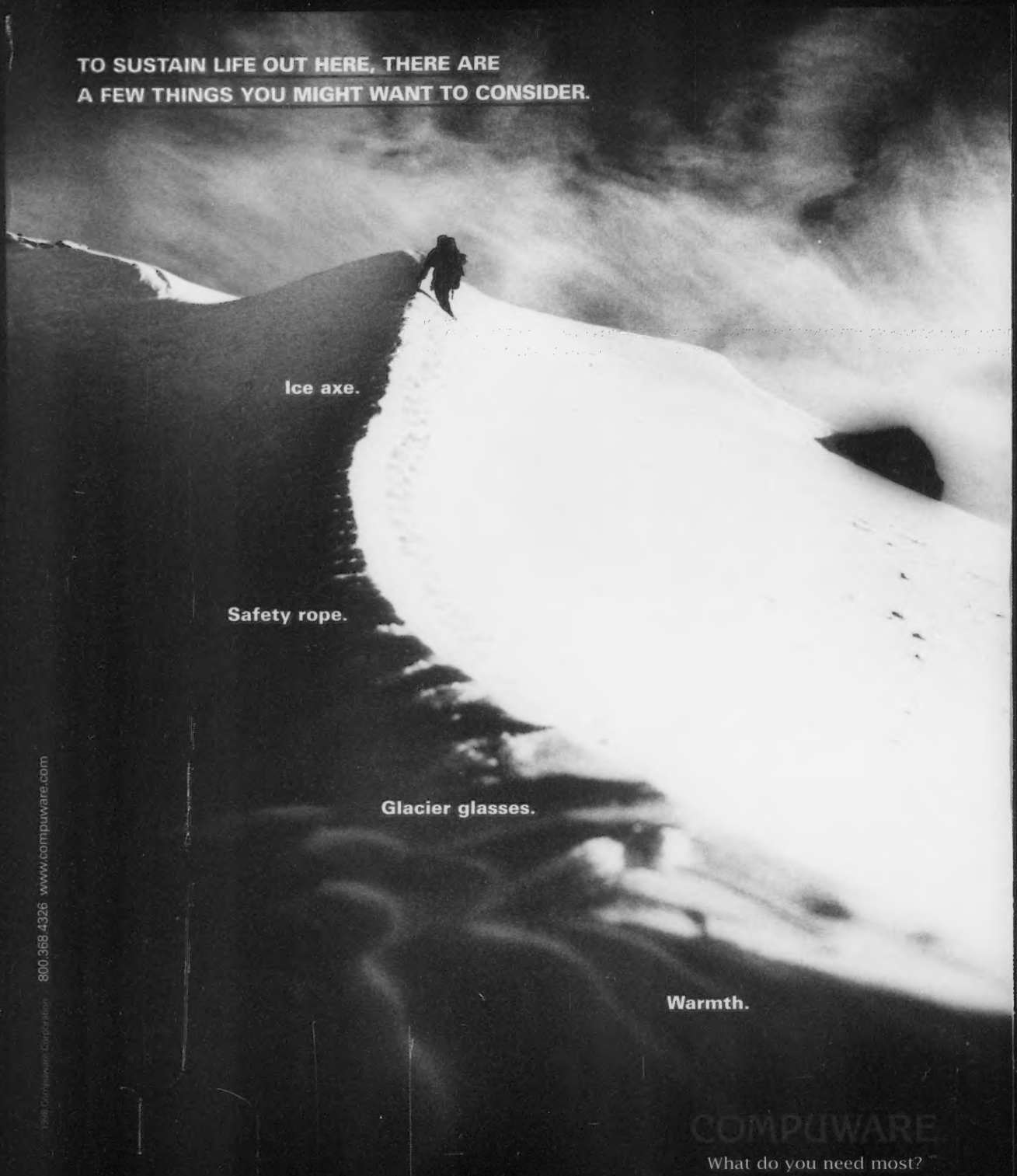

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Predictions for 1999: Pyrrhic victories abound

Bill Laberis

I used to shun "year-ahead predictions" columns but undertook one last year at my editor's suggestion. Lo and behold, I batted four-for-four.

That included (1) bandwidth issues would rise to the fore of IT challenges; (2) Java wouldn't be deployed widely, if at all, in business-critical applications; (3) year 2000 issues would be far from resolved by year's end; and (4) the link between IT and the business would continue unforged. So let's give it another try for that pivotal of years, 1999.

The government can't seek antitrust liens against an entire computer industry.

■ **With year 2000, you ain't seen nothing yet.** As compliance testing picks up steam — if not a sense of urgency — in the second half of 1999, it will become frighteningly apparent that the rest of the world is nowhere near as far along as the U.S.

Last June, I was the keynote speaker at a CIO conference in Madrid, and maybe half the people in the room had *begun* serious work on year 2000 issues. Most of Europe is that way.

And Asia? With 2 million unemployed white-collar workers in Seoul, South Korea (like many Asian economies) has spent nothing on year 2000 remediation.

You may think, "Well I'm here in the U.S., and therefore, I'm safe." But think of World War II: The gory parts took place on foreign soil, yet the influence here was utterly profound. The economy is, after all, a global entity, and ours is a piece of the whole.

■ **Microsoft wins, but . . .** Bill Clinton may "win" ultimately (that is, keep his job) because the discussion of his malfeasance moved from the courts, where the law on things such as perjury actually matters, to the House, where politics reign.

Conversely, Bill Gates will win because the discussion of his company's alleged malfeasance has moved from politics-laden Senate committees and the Justice Department to the courts. There, actual right and wrong matter. Worst case scenario: The government will prove that Gates and Co. are guilty as charged of competing with ferocity, using the exact same tactics employed by their detractors, only with better results.

Realizing it can't seek antitrust liens against an entire computer industry, which in fairness it would have to do, the government will lose its case.

■ **Here's the "but."** Pressure is going to build to break Microsoft into two easy pieces, one consisting primarily of an operating system company and the other of all the rest of the stuff, such as applications, languages and tools. And there could be pressure as well to consider yet a third entity that deals with all of Microsoft's ancillary businesses and partnerships.

I think that pressure is a likely outcome of the current trial, the government's losing effort notwithstanding. The *potential* for monopoly-like behavior that's derived from the interlocking relationships among those parts of Microsoft's current business (as shown in the trial) will build that pressure. Where it goes is anyone's guess.

■ **Linux takes its rightful place.** Among other niche operating systems, that is. The history of the computer industry is littered with "great" technologies that didn't make it big because they simply weren't mainstream.

With Linux, its inherent positioning is more anti-Microsoft than anything else, which is something users are clamoring for. Microsoft is what it is because there are tens of thousands of independent developers worldwide working on the Microsoft platform. That isn't Linux, not today, not in 12 months, and probably not ever.

How about your predictions for the year ahead? □

Editor in chief at Computerworld *from 1986 to 1996, Laberis is now president of Bill Laberis Associates, a consulting and publishing company in Holliston, Mass. His E-mail address is bill@laberis.com*

Energy companies seem far behind on year 2000

William Ulrich

If you hoped that recent Securities and Exchange Commission (SEC) 10-Q filings would demonstrate major year 2000 progress at large companies, you're likely to be disappointed.

Preliminary findings from a Triaxsys Research study show that Fortune 500 companies have spent, on average, 30% to 35% of their total year 2000 budgets as of October.

That study highlights the fact that companies have made little progress since the second quarter of this year, when those same companies had consumed, on average, 25% of their year 2000 budgets.

The SEC's disclosure requirements obligate large, publicly traded companies to report year 2000 spending to date, projected spending for the remainder of the project and the status of remediation and contingency planning efforts. For some, that has been a chance to demonstrate real progress.

For many others, their SEC disclosures reveal that they have a long way to go to nullify year 2000 risks. No single industry is immune to project delays, but our overwhelming reliance on power and energy magnifies the severity of the situation.

For example, Entergy Corp., a Southern power company, claims to have spent $15 million — less than 19% — of its $81 million year 2000 budget. Entergy's disclosure further states that "malfunctions could disrupt operations of nuclear or fossil generating plants, operation of transmission and distribution systems, access to interconnections with neighboring utilities, and cause other operational problems."

PG&E Corp., a California-based utility, spent $80 million — or 31% — of its $260 million year 2000 budget. Niagara Mohawk Power Corp. in New York state spent $5 million of its $40 million budget — or 12% — during that same time. And much of the difficult work still lies ahead, with just a year left.

Energy companies, which fuel numerous power plants, are also behind schedule. Chevron Corp. spent less than 16% of its $250 million year 2000 budget as of September.

The oil and gas company's 10-Q filing also stated that "interruptions could prevent the company from being able to manufacture and deliver refined products and chemicals products to customers. The company could also face interruptions in its ability to produce crude oil and natural gas."

The Exxon/Mobil conglomerate plans to spend $753 million to fix the problem. As of September, its two constituent companies collectively had spent $373 million — less than half — of their total year 2000 budget.

There are two ways to view those findings. One view assumes that, as a few companies have claimed, project teams are outperforming initial budget projections. In those cases, we're being told that companies don't need all of the money that they have set aside. If that's the case, I strongly encourage management to articulate why and how that came about in future filings.

Remediation efforts are missing the mark on many systems.

Another way to view that data is to accept it at face value. That's the more likely scenario given that a 1998 Cap Gemini Group survey claimed that upward of 80% of IT managers *underestimated* year 2000 spending requirements. Furthermore, IT projects traditionally run over, not under, budget.

It's unlikely that all those projects are an exception to that decades-old industry norm. With other sources indicating that remediation efforts are missing the mark on many systems and that contingency teams are still mobilizing, it's hard to be optimistic about the power and energy industries right now. □

Ulrich is president of Tactical Strategy Group Inc. and executive vice president of Triaxsys Research LLP. He is co-author of The Year 2000 Software Crisis: Challenge of the Century *and* The Year 2000 Software Crisis: The Continuing Challenge. *His E-mail address is tsginc@cruzio.com.*

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Strassmann mostly missed mark in targeting Microsoft as security threat to U.S.

I just read Paul A. Strassmann's article ["Microsoft: A U.S. security threat," CW, Nov. 30], and although I can't argue with its basic premise — one OS doesn't provide enough options — I do take exception to it for the following reasons: Strassmann doesn't offer any hope of change or suggest a new path to take. He offers no examples to explain why one OS is bad.

He did mention the Irish potato famine, but most people can't relate to that. I would suggest that he talk about the 1988 Internet worm incident, which basically targeted two operating systems. This worm shut the Internet down for several days and cost millions of dollars to eradicate. The last point I would offer is that Microsoft cannot and will not dominate the computer marketplace forever. History teaches us no organization or institution can stand forever as the leader. All regimes crumble.

Tom Stiehm
George Mason University
Fairfax, Va.
TSTIEHM@wpgate.gmu.edu

The column, "Microsoft: A U.S. security threat" is an interesting and provocative piece.

We probably never will have an operating system "monoculture," but this isn't the first time we've come close.

The way to address this issue is to educate and advocate what makes for a secure operating system. The present NSA/NIST classifications (C2, B1, etc.) could be expanded.

As for Microsoft, Windows NT server is rated C2, but Windows 95 is not, so it offers a variety of products.

Microsoft gets a lot of bad press, but mainframe security wasn't really good until the 1980s, with some improvements into the '90s.

I expect Microsoft will also make improvements.

Gerald R. DeMaagd, CISSP
Grand Rapids, Mich.
Gerald.DeMaagd@steelcase.com

Paul A. Strassmann's column really misses the point.

How is this situation any different than it was in the 1980s, when IBM's MVS ruled the world?

Today, our computer systems are more numerous, open and interconnected. Connections to the Internet, companywide networks and the public-switched network provide advantages but also create major security exposures.

At the same time, our information security staffs are understaffed, undertrained and not proficient enough to handle the exposures in the mainframe IBM OS/390, Microsoft NT and Unix environments.

This provides a much higher exposure to us than a monolithic operating system environment. We should be investing in information security technology, education and awareness within our companies.

Barry Schrager
EKC Inc.
Rosemont, Ill.
Schrager@ekcinc.com

It seems to me that Paul Strassmann only wants personal recognition, and he is bounding onto the back of the anti-Microsoft bull with unreasoned glee.

If Microsoft is such a threat, what about the fact that IBM is taking over as the outsourcing contractor for major insurance companies, banks and other corporations? The DOJ doesn't seem to think there's a possibility of danger. I asked them. This is far more disturbing than anything Microsoft is doing.

C. E. Buttles
Dallas
Watkins@solution4u.com

Thin clients make sense

I was surprised but pleased to read the news that thin clients make sense for IT professionals ["Thin clients breaking corporate barrier," CW, Nov. 16]. The initial anticampaign and anti-support from both Microsoft and Intel gave the impression that thin clients were going to die. The thin-client architecture makes perfect sense for end users in corporations and home PC users. The credit for thin-client architecture goes to Oracle, Sun and IBM. Microsoft and Intel were forced to come up with the Windows Terminal because the Java-centric thin client was a threat to them.

Bala Nemani
Design Data Systems
Clearwater, Fla.

Put products on the level

Not only does Microsoft believe in bigger, fatter products, but it also seems to have gone Hollywood. Every year brings a new crop of programs, like the fall television season.

Trouble is, people and companies neither want, nor can they afford, to upgrade each year. Computer users don't really want "light" versions of their favorite software. They actually want two levels inside each bloated product: basic and full. Selecting the basic function would load only the simplest functions; selecting full would load the whole product.

Paul Wetor
Wauwatosa, Wis.
paulwetor@aol.com

Thanks for crisis coverage

I am writing regarding an article in the Nov. 16 issue of *Computerworld* ["IT lends skills to Nicaragua crisis"]. I would like to thank the staff at *Computerworld* and Sharon Machlis for putting the piece together. Thank you for publicizing the work in Nicaragua.

Tony Piscotta
Ronin Corp.
Princeton, N.J.

Frankly, reader wonders where Hayes got his information on Java issue

I'm always disappointed when a reporter quotes facts and figures without providing the source of the information.

In "Kicking the Java habit" [CW, Nov. 23], Frank Hayes states that Microsoft should drop Java altogether because to fix its Java implementation it would have spend $5 million over a six-month period for Visual J++, and it would take at least three months for Windows. This appears to conflict with what I read on Techweb.com two days after the court order came out.

A Microsoft spokesperson was quoted as saying that it would have no problem complying with the court order because it would only have to swap out certain modules that weren't compliant in both Windows and Visual J++.

Where does Mr. Hayes get his information?

Brian Bischof, CPA
Louisville, Ky.
Brian@BischofSystems.com

Nortel comparison was a real head-scratcher

I just had to write after reading the article "Nortel policy networks to use Novell directory," [CW, Nov. 16].

Everything was fine until I read "NDS competes against Microsoft Corp.'s Active Directory" in the accompanying chart. How can a product that's not even shipping compete with one that has been in the market for at least four years? These kinds of comparisons don't make any sense.

At this time, NDS competes with Microsoft's domain-oriented networking.

Hugo Bueno
Mahwah, N.J.
hbueno@roe.com

Computerworld was dumb to offer platform for Medved's 'insights' on intelligence

It was with a mix of surprise and disgust that I read Michael Medved's column ["The Net offers utopia, if your IQ is high enough," CW, Nov. 23].

What compelled a fine trade magazine like *Computerworld* to print the ramblings of a pseudo-Nazi? His argument that "low-intelligence Americans" will have trouble joining in the Internet community was incoherent as well as insulting.

I dread what insights *CW* will offer us next week. Perhaps a column entitled "Reducing help desk calls through applied eugenics"? I hope Medved's column was a one-time mistake that *CW* will apologize for.

Robert Lyfareff
Roseville, Calif.
rlyf@ix.netcom.com

One of the reasons I read *Computerworld* is that its editorials are free of Huffington, Dershowitz, North and everyone else to whom consumer publications give a forum to regardless of content or relevance.

> Medved's argument that "low-intelligence Americans" will have trouble joining in the Internet community was incoherent as well as insulting.

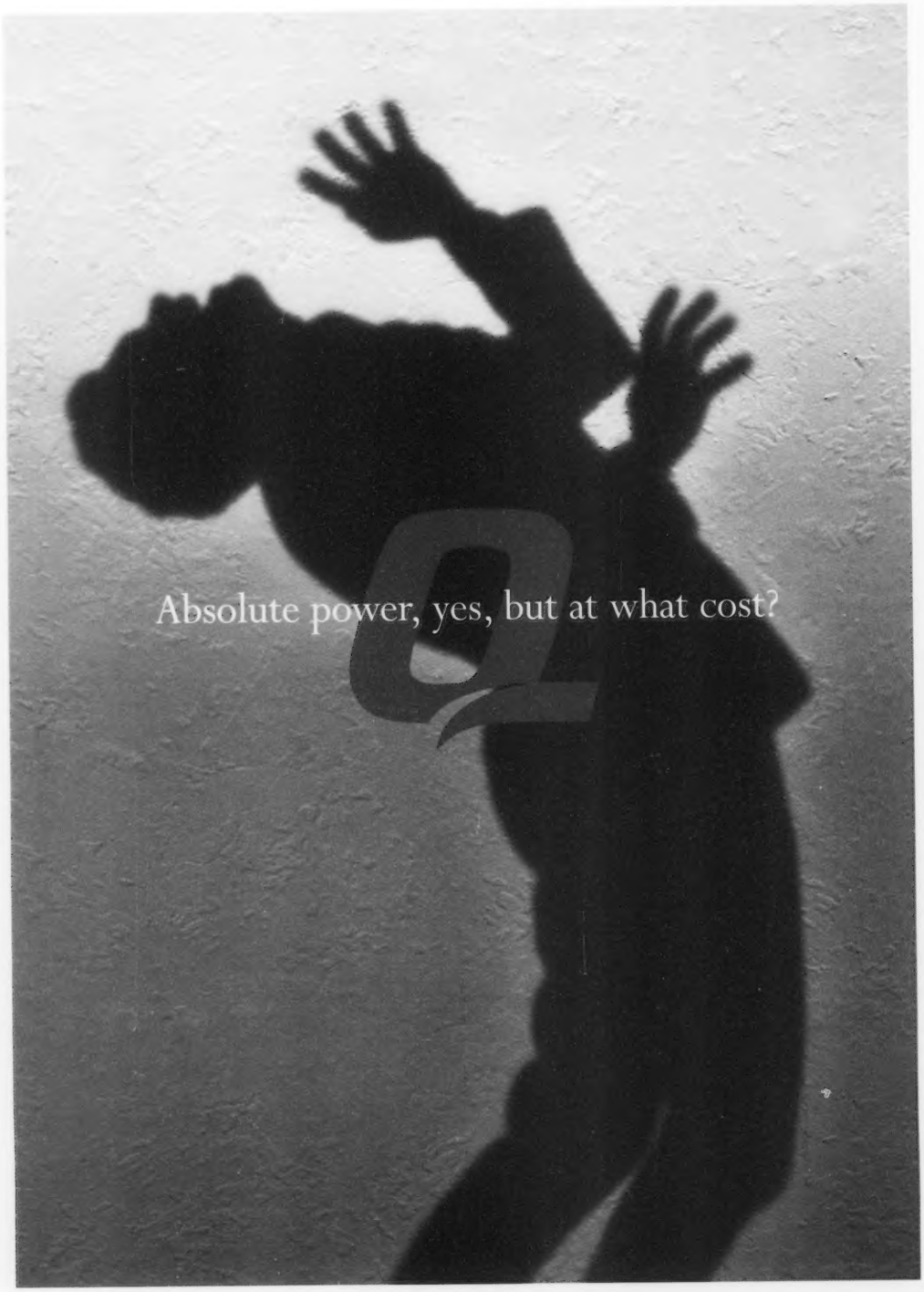
Now we have Michael Medved telling us that television is geared to idiots who are happy to be stupid, but smart people can use the Web to become more superior.

In doing this, he glibly ignores how the amount of drivel on the Web rivals that in any television network programming.

And Web access is far more dependent on economic factors than raw intelligence.

I hope Medved's daughter learns not to be so judgmental of below-average people and their entertainment, and *Computerworld* will be less impressed by a marquee name in the future.

David Moskowitz
Los Angeles
davidm@mullinconsulting.com


Absolute power, yes, but at what cost?

Apparently, very little.

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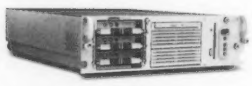

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Compaq ProLiant 6500 server, for example, has superior system architecture to handle the

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- Microsoft® Windows® 95 pre-installed
- 3-year limited warranty[3]

$1,289[1]

- Intel Celeron processor 333 MHz
- 32 MB SDRAM
- 3.2 GB[6] Ultra ATA SMART II Ultra Hard Drive
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- Compaq 10/100 TX PCI Intel NIC with Remote Wakeup
- Compaq PremierSound
- Compaq V55 15" (13.7" viewable) monitor
- Microsoft Windows 95 pre-installed
- 3-year limited warranty[3]

$1,819[1]

- Intel Pentium II processor 350 MHz
- 32 MB SDRAM
- 6.4 GB[6] SMART II Ultra ATA Hard Drive
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- Intel Pentium II processor 450 MHz
- 64 MB SDRAM
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- Compaq 10/100 TX PCI Intel NIC with Remote Wakeup
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- Dual-Peer PCI Buses
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- ELSA GLoria Synergy+ or Powerstorm 300 graphics controllers

[1]All prices and discounts shown refer to U.S. estimated selling prices on select models. Reseller prices may vary. Operating system installed on desktop and notebook products. Compaq is not liable for pictorial or typographical errors in this advertisement. [2]Pre-failure warranty offers replacement of SMART hard drives before they actually fail when using Compaq Insight Manager. Some restrictions and exclusions apply. [3]Certain restrictions and exclusions apply. [4]24X Max CD-ROM data transfer rates vary from 150 to 3600 Kbps. [5]32X Max CD-ROM drive data transfer rates may vary from 150 to 4800 Kbps. [6]The K56 flex protocol is designed only to allow faster downloads from K56 flex compliant digital sources. Maximum achievable download transmission rates currently do not reach 56 Kbps, and will vary with line conditions. [7]When 128 MB memory modules are available. [8]For hard drives, GB=billion bytes. Intel, Intel Inside Logo and Pentium are registered trademarks and Pentium II Xeon and Celeron are trademarks of Intel Corp. Microsoft and Windows NT are registered trademarks of Microsoft Corporation. Other products mentioned herein may be trademarks or registered trademarks of their respective companies. Compaq, Compaq logo, Deskpro, and ProLiant are registered trademarks. Armada and Compaq PremierSound are trademarks, and Better answers is a service mark of Compaq Computer Corp. ©1998 Compaq Computer Corp. All rights reserved.

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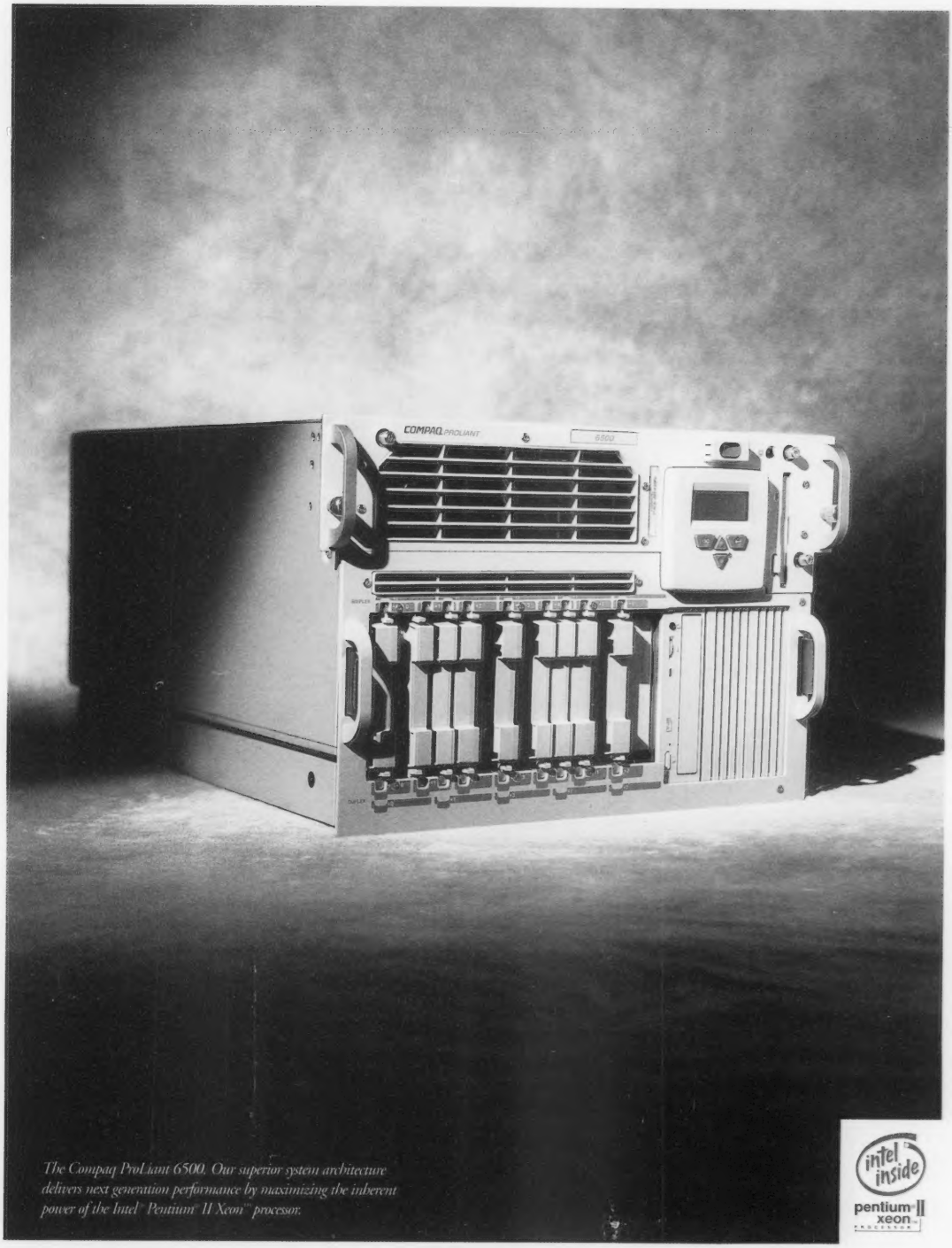

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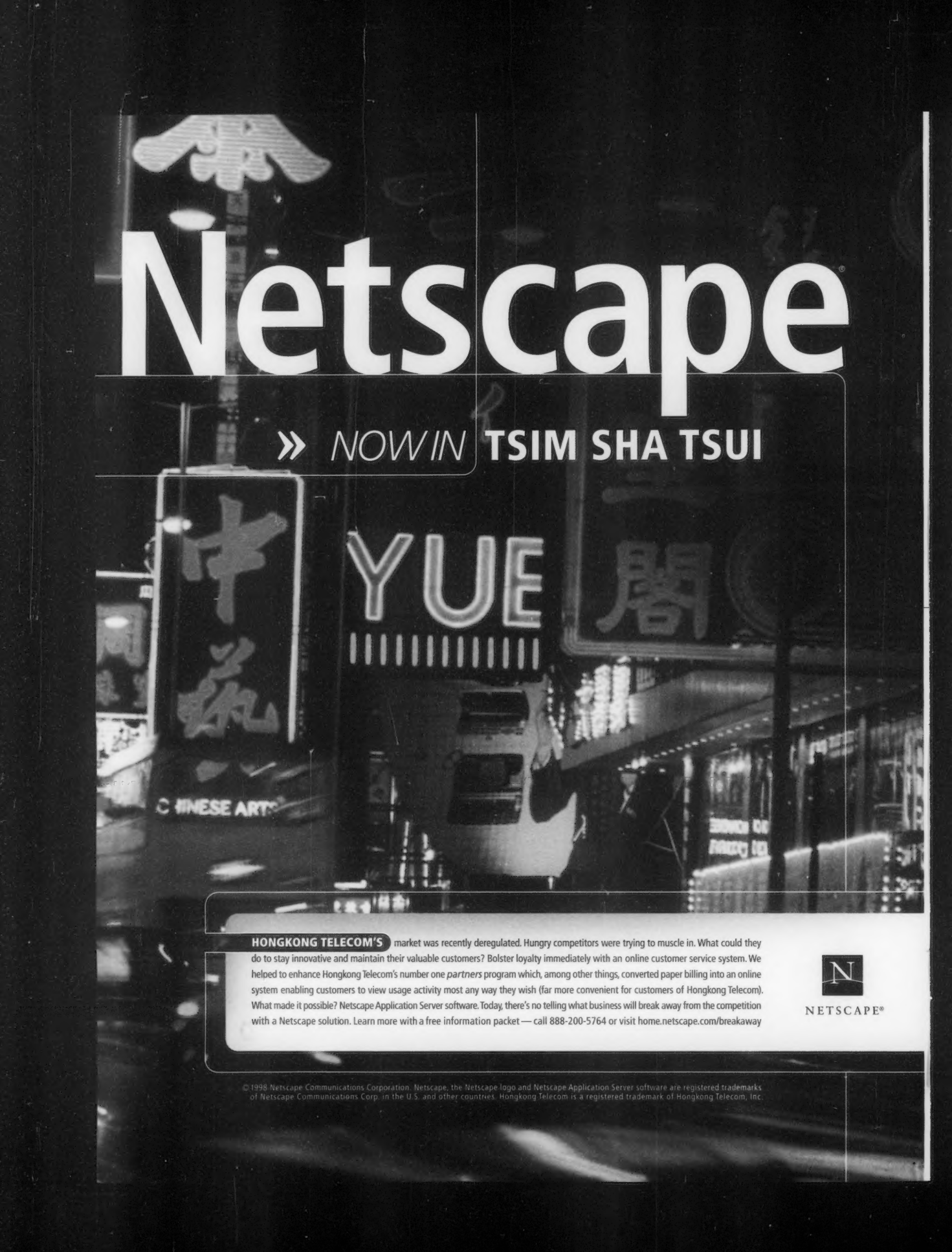

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Corporate Strategies

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Briefs

Recruiting from within

57% of companies fill 5% of their IT jobs by recruiting from their business units. About 29% of companies said they get 10% to 20% of their IT staff that way.

Base: Survey of IT managers at 300 U.S. companies

Source: "IT Staffing and Compensation Guide," Meta Group Inc., Stamford, Conn.

Outsourcing deals

New Jersey Transit Corp. and Maritime Telegraph and Telephone Co. in Halifax, Nova Scotia, recently signed a multimillion-dollar outsourcing contract with Atlanta-based MCI Systemhouse. Under a $7.8 million deal, the integrator will implement Oracle Corp.'s financial applications to replace aging legacy systems. The 4.5-year contract with Maritime is valued at $30 million.

Net processing

Sportsline USA Inc., publisher of CBS Sportsline (*www.cbs.sportsline.com*), has hired PaymentNet in Pleasanton, Calif., to provide secured, Internet-based payment processing services for its electronic-commerce site (*www.TheSportsStore.com*). PaymentNet claims that it can process Internet transactions in three to five seconds.

CIO migrations

John A. Fiore has been named CIO at State Street Corp. in Boston. Fiore was most recently CIO at State Street Global Advisors, the bank's investment arm. Fiore, 47, replaces James M. McDonald, who is leaving State Street for employment in the technology industry.

Chasing the euro

The Chase Manhattan Bank in New York has successfully completed three dress rehearsals in preparation for its systems to recognize and process orders placed in the euro currency beginning next month.

Experts share advice on hiring contractors

By Julia King

EVER SINCE a group of temporary IT contractors successfully sued Microsoft Corp. for potentially millions of dollars in employee benefits, companies have been gun-shy about hiring independent information technology workers.

But as critical deadlines close in on year 2000 and other enterprise software projects, they may have no choice.

"In this tight labor market, you have to look at all different ways to get people into your company," said Kerri Morehart, a director and hiring manager at SRA International Inc., a Fairfax, Va.-based systems integrator.

And that includes contractors who raise a red flag for Internal Revenue Service auditors. They're looking for companies that hire and classify workers as temporaries even though they may be working as full-time employees. But as Morehart sees it, "If a company has good policies in place, you don't have anything to fear."

So what constitutes a good policy? And what's the best defense against a lawsuit or visit from federal auditors?

Appearances are everything, experts say.

That's why companies need to make crystal-clear distinctions between how contractors and employees are treated on the job.

For example, "Don't ever give contractors any benefits of any kind, even if it's direct deposit of their checks," said Harvey Shulman, an attorney based in Washington who has handled more than 50 audits of companies that used independent contractors.

As ridiculous as it sounds, attorney Craig Etter in McLean, Va., also advises companies to have their contractors advertise in the Yellow Pages of the telephone book.

"Now, we all know that no-

Contractors, page 48

How to hire independent contractors without raising the ire of the IRS

DO

- Hire contractors who have incorporated as an independent business
- Get a copy of contractor's employment and income tax returns
- Keep on file the contractor's W-9 form, business card and stationery
- Obtain proof of contractor's liability insurance

DON'T

- Offer contractors benefits of any kind
- Rehire former employees as independent contractors

Second set of Y2K eyes

▶ *Contractors useful in reassuring readiness*

By Thomas Hoffman

Although some companies are hiring external auditors such as KPMG Peat Marwick LLP to double-check their year 2000 readiness, others are finding it just as useful to hire contractors to act as the extra set of eyes examining project plans.

"We're a public company, and we owe it to our shareholders, customers and employees that, come January 2000 we will survive," said Brad Kerr, CIO at HA-LO Industries Inc., a Niles, Ill.-based promotional products company. The only way to do that, Kerr said, is to bring in outsiders to review its year 2000 project and give its board of directors "a comfort level." HA-LO brought in Metamor Technologies Ltd. — a Chicago-based services firm to which it

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HOLIDAY READINESS

Sears' new apps ring in season sales

By David Orenstein

VETERANS AT Sears, Roebuck and Co. such as Bernie Bartelli have bad Christmas memories from 1994. Then, a grinch called "inadequate infrastructure" caused glitches, failures and slow performance at stores' retail systems.

Bernie Bartelli

Sears' retail systems exec rings in the new year with system upgrades

"I was being called into many a regional vice president's meeting to explain," said Bartelli, Sears' vice president of retail information systems.

The problems were so jarring that Hoffman Estates, Ill.-based Sears resolved to address problems and test the fixes or upgrades before each holiday season began.

About a third of the company's sales occur from October to December. "You don't have any time to react if your systems can't handle it," Bartelli said.

This year, a task force of about 50 information technology employees has worked since the end of last year to pre-

Sears, page 48

After J. B. Hunt raised drivers' salaries . . .

- Workers' compensation claims fell **41%** this year from last year
- Property/casualty claims decreased **36%**
- Collisions dropped **44%**
- The average driver's experience rose from **4.8** years to **7.2** years

Analysis cuts truck accident rate

By Stewart Deck

EXECUTIVES AT long-haul trucking firm J. B. Hunt Transport Services Inc. knew they needed to cut down on driver turnover. Although replacing experienced hands is costly in any business, new hires in trucking also can mean more accidents — which are hazardous to more than the bottom line.

DATA WAREHOUSING

Last year, J. B. Hunt hauled some telling data out of its data warehouse to convince management that raising drivers' pay would help the Lowell, Ark.-based company land more-experienced drivers and reduce turnover.

"We used the warehouse to determine what accident costs would be, which were attributable to new drivers and, therefore, which ones would go away if you had drivers with over four years' experience," said Kay Palmer, an executive vice president of application services at J. B. Hunt. "We then looked at what our current driver pay was, what it would cost if it increased and how that would change training costs."

So J. B. Hunt raised drivers' pay by 30%, allowing the company to hold on to experienced drivers, Palmer said. That helped the number of collisions

Analysis, page 48

Experts share advice on contractors

CONTINUED FROM PAGE 47

body uses a computer consultant from the Yellow Pages, but if you can show a Yellow Pages ad for an independent contractor, it can make all the difference in the world to an IRS auditor," Etter said.

Companies can't require contractors to advertise, but Shulman and Etter both advise paying contractors a slightly higher fee as an incentive to do so.

Another option is to hire hardware and software consultants employed by computer staffing firms, which typically charge a premium of about 20%. Indeed, following the Microsoft ruling in 1996, some companies instituted policies to hire contractors exclusively through such firms.

Still other companies, including Astra Pharmaceuticals in Wayne, Pa., bring in contractors on a project-by-project basis under formal, multiyear outsourcing agreements.

"We have no independents in our own IT group, but we do bring them in under our long-term relationship with Andersen Consulting," said Mike Dembo, human resources business partner at Astra.

But even with contracts in place, hiring managers have to keep on their toes, checking all documentation.

Hiring from a staffing firm doesn't automatically guarantee immunity from IRS scrutiny. The reason: Even staffing firms now have no choice but to contract with IT people who want to remain independent rather than become their employees, Shulman said.

In those cases, hiring managers at both the staffing firm and the client company need to collect any and all documentation that indicates that the contractors are in business for themselves and are offering their services as independent contractors.

That includes copies of a contractor's individual income and employment tax returns, the contractor's business card and letterhead stationery and a copy of a check from the contractor's business bank account.

"By keeping copies of all of this in your files, you'll be two steps ahead when the IRS comes through your door," Etter said. □

Analysis cuts accident rate

CONTINUED FROM PAGE 47

involving J. B. Hunt truckers to drop 44% from 1997 to 1998, although the actual numbers weren't available. Property/casualty claims dropped by 36% during that span.

Of course, the warehouse's effectiveness has gone beyond drivers' issues. It also has helped the company discover details about its business that weren't readily apparent before. Analysts said such data analysis has only recently started finding its way into the trucking business.

"Trucking is an industry where asset optimization is critical, so the best companies analyze how to best balance [routes] and loads," said Stephen Klein, an analyst at S&P Equity Group in New York. "It wasn't until the last five years [that] the trucking industry has been better in tune with using high-tech capabilities."

J. B. Hunt's data warehouse began in 1992, when its information technology team was getting flooded with requests for sales and marketing information and there was no easy way to comply.

Mileage, pricing, driver, fuel and maintenance data for precise analysis was spread over multiple applications and was difficult to filter into one report. So the group built a data warehouse, creating historical order tables by taking each trucking order, breaking it down to the road and route level and adding customer information. Users flocked to it.

"People got their own answers very quickly, so of course they wanted more and more information included, like each dispatch within an order, for example," recalled Greg Patterson, J. B. Hunt's information systems consultant for data warehouses. Now, six years later, the J. B. Hunt warehouse has 715 users, handles close to 60 concurrent users during each day's peak query times and houses almost 100G bytes of data.

J. B. Hunt also is using it to better understand common characteristics among its most profitable customers. Users can look into the routes where empty truck miles are most likely to occur, the places where unexpected traffic congestion slows down shipments and the load types that may be theft targets. Customers, who have access over the Web, can oversee how much each load costs and look for unusual damage or time trends.

Kay Palmer: **J. B. Hunt raised its truckers' pay based on projections made by data analysis**

Still, Palmer said, 700 users may be too many. "If we were starting over, I'd focus on [giving access to] fewer users and more power users," Palmer said. "It can be expensive from a CPU standpoint if novice users are writing queries any way they want. And inexperienced users can misinterpret data if they aren't careful."

In the future, Palmer said, the system will use real-time data from each truck's engine to see who's driving efficiently and which drivers are slamming their brakes most frequently. Over time, better-trained drivers may reduce the need to call up driver safety queries. And make highways safer, as well. □

Sears' new apps ring in season

CONTINUED FROM PAGE 47

pare for the holidays.

Last year, the team won the Sears chairman's award for reducing the number of glitches with point-of-sale transactions by 73%.

During last year's holidays, 60,000 transactions out of 100 million had glitches. In 1996, there were 222,000 problems even though the total number of transactions was smaller.

STRIVE TO UPGRADE

Last year, the company scrapped the inadequate and patchily upgraded PC servers that had been around since the early '90s. Instead of PCs running IBM's OS/2 1.3 on 66-MHz 80486 processors with 32M bytes of memory, stores now have 200-MHz Pentium Pro-based PCs with 96M bytes of memory running OS/2 2.1. They will be upgraded to OS/2 Warp 4.0 next year.

During the past few years, Sears has reduced the time customers must wait to pick up merchandise, such as televisions, from 16 minutes to six. To do that, Sears installed a radio-frequency network and equipped stockroom workers with handheld receivers.

This year, Sears installed speech-recognition software that routes as many as four simultaneous callers to requested departments in the store [CW, July 13].

Also new this year is a frame-relay network that speeds up data communications between the stores and the outside world — including the home office — from 2M bytes per hour to 25M bytes per hour, Bartelli said.

Analysts said Sears has overcome its low-tech history. "They're at least on par [with other big stores]," said Eric Olson, managing editor at "Retail Systems Alert," a retail technology publication in Newton Upper Falls, Mass. "Most retailers now have at least a first-generation Pentium in their stores," he said.

The retail culture of muddling through each season with small software patches is understandable because of the industry's thin profit margins, said Larry Lapide, an analyst at AMR Research Inc. in Boston. But that culture is now threatened in an era when extensive IT investments have helped vault Wal-Mart Stores Inc. to a big lead, he said.

A stable store infrastructure is the baseline for providing satisfactory customer service, said Amin Shahidi, a consultant at Kurt Salmon Associates in Los Angeles.

General merchandise retailers need to begin experimenting with more advanced systems such as smart cards and self-checkout systems to gain new competitive advantages, Shahidi said. □

Second Y2K look

CONTINUED FROM PAGE 47

outsources application development and other functions — to handle its year 2000 project management.

Other companies, such as Cessna Aircraft Co. and Grange Mutual Casualty Co. also are using outsiders to make sure they haven't taken any millennial missteps. "Everyone knows that year 2000 problems are going to manifest themselves, even in shops that have been extremely diligent," said Peter Burris, an analyst at Meta Group Inc. in Stamford, Conn. Outside parties often review year 2000 projects and locate trouble spots insiders overlooked.

Grange, a Columbus, Ohio-based property and casualty insurer, hired Cincinnati-based Tominy Inc. in April 1997 to help it expand the date fields in 400,000 lines of a commercial Cobol-based claims processing code that it had heavily modified.

Using Tominy's Comp2000 system, which modifies source code and expands date fields from six digits to eight, Grange was able to complete its systems remediation in August.

In addition, Grange was able to lean on Tominy to review its work. "If we had an issue, they were either working on it [at Tominy's offices] or came up here the next day," said Brent Wyrick, manager of personal lines applications at the insurer.

Cessna used Interim Services Inc.'s technology group in Fort Lauderdale, Fla., to review its methodologies, according to Sandy Gieber, year 2000 program manager at Cessna.

HA-LO Industries, whose revenue has increased from $75 million six years ago to more than $500 million, has been outsourcing IT services such as application development, help desk and year 2000 project management to Metamor for the past 15 months. The benefit to HA-LO, Kerr said, is that his company can add technology resources as needed at "attractive" prices in tight labor markets such as Chicago and Detroit.

Having Metamor double-check HA-LO's work made the deal even more advantageous, Kerr said.

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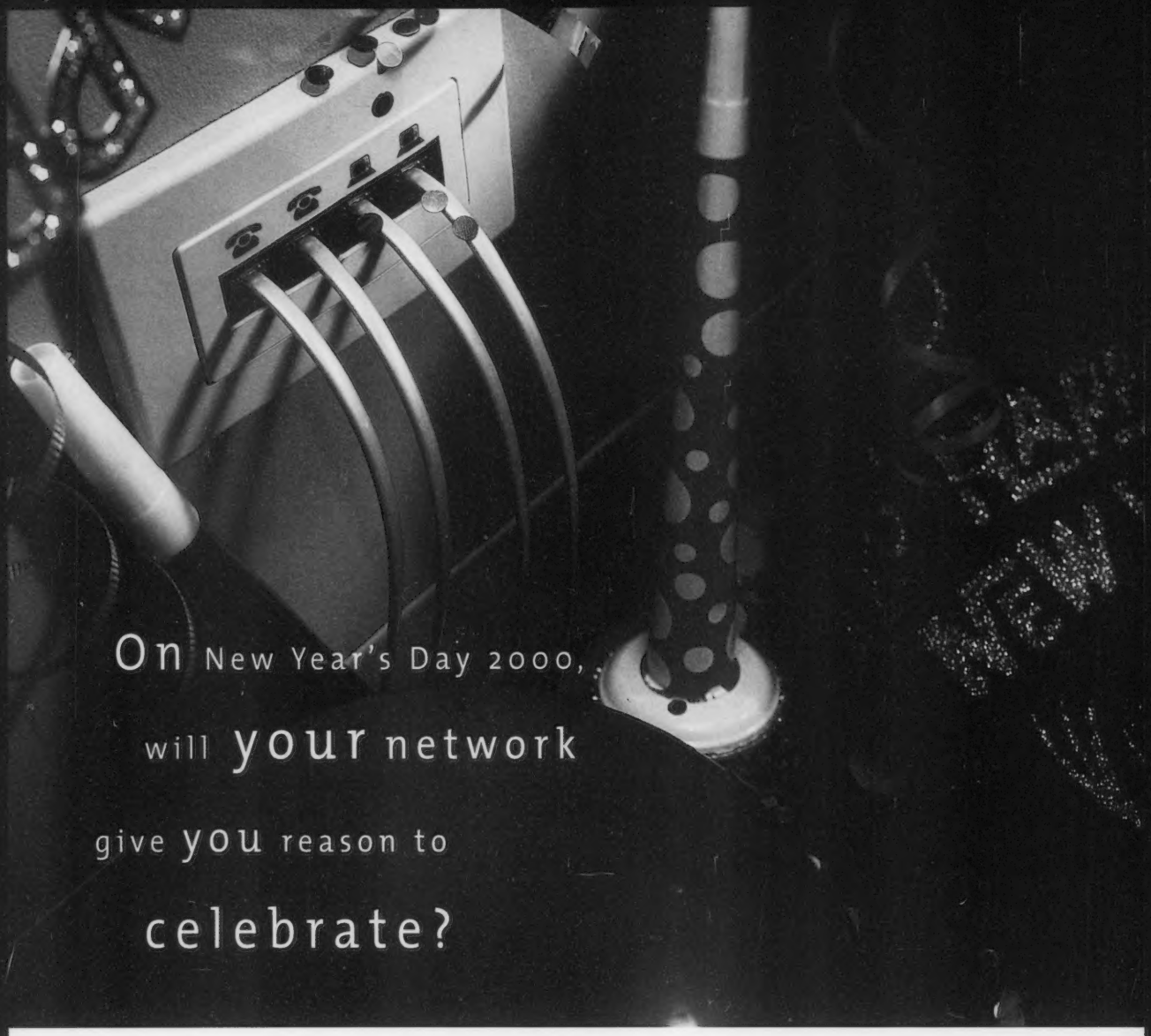

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Internet Commerce

Extranets • The World Wide Web • Intranets

Briefs

HEALTH QUEST

Leading topics for people seeking health information online:

Diseases	52%
Diet and nutrition	36%
Pharmaceuticals	33%
Online newsletters	32%
Women's health issues	31%
Fitness	29%
Children's health issues	15%
Illness support groups	13%

Base: Survey of 2,000 U.S. adults; margin of error +/- 3.1%

Source: CyberDialog Inc., New York

BP software project

British Petroleum last week said it will use document and knowledge management software from Pleasanton, Calif.-based Documentum Inc. to ease the flow of information involved with its Eastern Trough Area Project. The group of seven integrated oil fields was developed for $2.5 billion. The oil company integrated the software in its client/server and Web environments in the third quarter.

3Com's backbone

Netscape Communications Corp. said 3Com Corp. will use its Messaging Server Hosting Edition and Directory Server software as the backbone for its Internet messaging service for the new Palm VII organizer. The two-way wireless messaging service will be available in an initial field trial early next year, with commercial availability to follow.

CSC expands offerings

Systems integrator Computer Sciences Corp. (CSC) in El Segundo, Calif., said it will expand its electronic-commerce offerings in partnership with various product vendors. CSC will focus on five added areas: asset management, electronic bill payment, supply-chain collaboration, procurement and extranet communities. CSC expects $100 million in electronic-commerce revenue for the fiscal year ending in March.

Will users be left behind?

▸ *Professor/author discusses Netscape's future*

America Online Inc.'s acquisition of Netscape Communications Corp. is raising questions about the future for Netscape's corporate customers. Computerworld *senior editor Carol Sliwa interviewed David Yoffie, a Harvard Business School professor and co-author of* Competing on Internet Time: Lessons from Netscape and its Battle with Microsoft, *about the effects of the merger.*

Author David Yoffie: **AOL's "marketing orientation has been almost exclusively focused on consumers"**

CW: What are the major unanswered questions?

YOFFIE: One obstacle remains whether or not [AOL CEO] Steve Case is really going to be able to keep all the people who have made Netscape possible. There's more than adequate opportunity in [Silicon] Valley, and the financial upside may be greater at a smaller company. In addition, AOL is basically a consumer marketing company that doesn't know anything about enterprise software.

Number two, AOL has yet to articulate how they are going to integrate the Netcenter Web site with the AOL Web site or the AOL proprietary content.

And the third major area of execution is the actual operating of an enterprise software business. Despite the deal with Sun [Microsystems Inc. to develop, license and market Netscape products], AOL still has responsibility for running the business.

CW: If you were a Netscape customer, what would be your greatest concern?

YOFFIE: Will Netscape continue to be a true cross-platform player, or are they going to become so closely tied to Sun and Solaris that it forces us to rethink whether this is the right solution?

The other concern is, Will AOL continue to invest with the same degree of commitment to the enterprise business that Netscape was willing to invest? That concern is muted to some degree by the agreement with Sun.

Netscape, page 53

Outdoor goods seller creates online outlet

By Sharon Machlis

OPENING A DISCOUNT outlet can be a tricky business — the merchandise is discounted, but there's no guarantee there will be enough to adequately stock a store. That's why executives at outdoor goods retailer Recreational Equipment Inc. (REI) considered the idea but never opened any outlet stores.

But online, where the company's flagship retail Web site is set to turn a profit after three years of development, the Kent, Wash.-based collective launched an outlet site this summer.

The site, *www.reioutlet.com*, can offer close-outs and other specials, with separate policies from the main site, such as not offering a blanket 30-day satisfaction guaranteed policy.

The sites also run different promotions. For instance, a free-shipping special on the main page might not be offered on the discount site.

It's an unusual move for a mainstream retailer, considering that most of them are just trying to duplicate their brick-and-mortar brands online, said Vernon Keenan, an analyst at Keenan Vision Inc. in San Francisco. But he said it makes sense for REI to explore other retail ideas, using the company's already-known brand.

"It's not clear at all that existing retailers are going to be successful on the Web," Keenan

REI outlet, page 53

REI's Matt Hyde: **"The outlet business lends itself well to the Web"**

Snapshot

TOP ONLINE RETAIL CATEGORIES

RANK	1998	2002*
1.	Computers	Travel
2.	Travel	Food & beverage
3.	Books	Computers
4.	Gifts & flowers	Entertainment
5.	Entertainment	Books

*Projected

Source: EMarketer, New York, study and analysis of multiple industry forecasts

Web retailers suit up for holiday rush

▸ *Sites aim to fill up surfers' stockings*

AS THE HOLIDAY SEASON proceeds, so do retail efforts on the Web. Our updates on Web holiday shopping continue.

■ Earlier this month, 800.Com offered a special promotion: three videos, digital video discs or music CDs for a dollar. The response was so overwhelming — 10 times what executives expected — that the traffic flood "basically shut us down for a day," said CEO Gregory Drew. The site scrambled to add capacity, boosting its farm of Windows NT servers from 18 to 28.

Drew said each server went up in just an hour and a half because of Convoy Clustering, load-balancing software from Valence Research Inc. (recently acquired by Microsoft Corp.). Without a modular architecture, he said, the site would have been closed even longer.

The promotion — which publicized 800.Com's expansion into music and video from consumer electronics — wasn't cheap; between the dollar giveaways and the 10 new servers, Drew said, it will easily cost "millions." But he said it's well worth it for the resulting list of potential new customers. (800.Com Inc., *www.800.com*, Portland, Ore.)

■ For the person who would like to buy something intimate for a woman but doesn't relish browsing for it in public, nationwide lingerie specialist **Victoria's Secret** launched its commerce site Monday.

VictoriasSecret.com lets shoppers view matching lingerie and accessories based on size and color preference and also offers gift suggestions. Likely to be popular among shoppers and Web surfers alike: video clips of models from Victoria's

Web retailers, page 53

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REI outlet

CONTINUED FROM PAGE 51

said. Duplicating a physical store online doesn't take advantage of the Web's capabilities, including personalization, customization, targeted marketing and flexible inventory offerings.

The retail market and philosophy on the Web are much different from that in the physical world, agreed Matt Hyde (mhyde@rei.com), director of online sales at REI. "The outlet business lends itself well to the Web," he said. "In the outlet business, you have ebbs and flows of products based on the season and vendors' sell-through. Online stores, unlike physical stores, can naturally expand and contract as your product assortment changes."

But Hyde added that REI's main lesson from its experience selling online has been that nothing is as easy as it looks.

The original REI.com site was launched in September 1996 with about 800 items for sale. Holiday sales then were tiny but exceeded projections. "That was the moment on the Internet that I took a sigh of relief and [thought] 'This is going to work,' " Hyde said.

REI.com's success led to an outlet site, *www.reioutlet.com*, which was launched this summer

TIME TO REBUILD

A year later, Web stores had become so much more sophisticated that REI.com had to be completely rebuilt. The company tried to stick with packaged software as much as possible but was forced to do "a whole bunch of coding" to get the site it wanted.

REI switched from from Netscape Communications Corp.'s commerce server to IBM's Net.Commerce, but it found that you can't just buy a software package, plug it in and have a large-scale site up and running, Hyde said. "I don't think of [electronic-commerce software] as packages. I think of them as development platforms."

The two-month-long rebuild of REI.com went more smoothly than expected, Hyde said. The biggest challenge was integrating the Web site with back-end systems, he said. REI has done that largely by custom C programming, as well as Perl scripts and IBM's Net.Data environment for Net.Commerce software.

New middleware products are becoming increasingly popular for such integration, but Hyde decided not to add major middleware code. "The learning curve you have to go through with all this is painful," he said. Meanwhile, his staff already knows C and Perl.

He declined to discuss specific figures, but Hyde said REI has consistently underestimated traffic at its site and conducts "nonstop server upgrades" to handle it all.

But Hyde did say the investment has been worth it. REI.com now pulls in revenue equivalent to a large REI brick-and-mortar store. And it's the fastest-growing piece of REI's business. □

Netscape

CONTINUED FROM PAGE 51

CW: Do you think AOL will help Netscape become a major enterprise player?

YOFFIE: I am skeptical that AOL is going to become a major enterprise software company. . . . AOL has had a very rocky history of integrating acquisitions, from small to large. . . . And its marketing orientation has been almost exclusively focused on consumers.

AOL is closer to the culture of [Walt Disney Co.], and Netscape is closer to the culture of IBM. And merging those two into one integrated culture is a difficult, if not close to impossible, task.

CW: What's your prediction for three to five years down the road?

YOFFIE: My best guess is that AOL will sell the enterprise software business, and it will try to integrate Netcenter with AOL.com to create a mega Web site.

And the big unknown in this prediction is what happens to the browser. Will the Netscape Navigator and Communicator product die? Or will AOL in fact build [or] try to build Navigator into an honest-to-goodness competitor to [Microsoft Corp.'s] Internet Explorer?

CW: Should they?

YOFFIE: For AOL to realize the value out of this merger, they probably need to keep Navigator alive. . . . If Microsoft wins the browser wars, it will be a significant threat to AOL . . . because it will drive the vast majority of Internet users directly to Microsoft's home page.

CW: Do you think Netscape's enterprise software business was profitable enough to survive on its own?

YOFFIE: No. The reason for this merger in the first place was that the enterprise software business did not generate enough positive cash flow to sustain itself and therefore was being subsidized by the Web site business. Prior to that, it had been subsidized by the browser business.

CW: What were Netscape's biggest mistakes?

YOFFIE: They were overambitious about their vision of the future, and as a consequence made a variety of decisions that included pursuing virtually all aspects of Internet software over time rather than focusing their resources. It also led them to underestimate the value of the Web site.

They got so focused on speed that they missed their metrics on quality and design. In particular, they failed to componentize the browser . . . and they began to have problems in new product design and new product development.

Third, Netscape had an opportunity to quietly and perhaps more effectively than anybody in history replace Microsoft as the universal interface for all computing. [But] they got so obsessed with beating Microsoft and so arrogant [of] their own position that they did everything in their power to antagonize Microsoft and stimulate them to retaliate.

CW: Do you think the merger affects the Department of Justice's case against Microsoft?

YOFFIE: No. It complicates the government's case, but it doesn't affect the basic question. It reduces some of the [remediation] options the government might have pursued.

CW: Is there any credence to Microsoft's theory that Netscape's failure had more to do with its own mistakes than with Microsoft?

YOFFIE: No. It's very clear that Microsoft was willing to do anything and everything to make life hard for Netscape. □

SHORT

ActionPlan 3.1

San Mateo, Calif.-based Netmosphere Inc. last week released an upgrade of ActionPlan, the company's collaboration software for managing and executing projects over the Internet. ActionPlan 3.1 features new customizable best-practices templates that include task notes and task constraints. The templates provide managers with a blueprint for things such as scheduling, distributing and doing project tasks.

ActionPlan 3.1 is shipping now. It costs $2,500 for five user licenses.

Web retailers

CONTINUED FROM PAGE 51

Secret photo shoots and fashion shows. The site was developed with Resource Marketing Inc. in Columbus, Ohio, and IBM. (Victoria's Secret, owned by Intimate Brands Inc., *www.VictoriasSecret.com*, Columbus, Ohio)

■ **Virtual Jerusalem** has opened an online Hanukkah shop that features holiday gifts from major electronic retailers such as Amazon.com and Reel.com, as well as Jewish specialty sites. Goods include Jewish music, games, toys, books and movies. The main site has a variety of Judaic content — including a Webcam trained on one of Judaism's most holy sites, the Western Wall. (Virtual Jerusalem, *www.vjshop.com*, Jerusalem)

■ Hoping to cash in on the spirit of charitable giving, **Shop2Give** lets consumers earmark a portion of their purchases at the site to a nonprofit organization. One of the featured causes: the American Red Cross. A percentage of money spent goes to aid victims of Hurricane Mitch. Participating retailers include Avon Products Inc., Brookstone Inc., IBaby Inc. and J. Crew Group Inc. Retailer donations range from 3% to 5%. (Shop2give.com LLC, *www.shop2give.com*, Los Angeles)

■ Giving a teddy bear this holiday? Now, you can E-mail one — well, a gift certificate for one. **PersonalGift** set up a Teddymail site that carries bears made by plush toy manufacturer Gund Inc. The giver chooses a price range, and the recipient gets to pick what bear he or she wants based on a selection that appears on a Web page personalized for the child. (Personal Gift Inc., *www.teddymail.com*, San Carlos, Calif.)

■ If it's getting toward Christmas Eve and you still haven't selected your holiday gifts, **Beyond.com** is touting electronically delivered software for "when all the malls are closed and it's too late even to pay extra shipping charges and overnight a gift." The site will send a software package electronic?lly to any Internet address, complete with "virtual gift wrapping." (Beyond.com, *www.beyond.com*, Sunnyvale, Calif.) — *Sharon Machlis*

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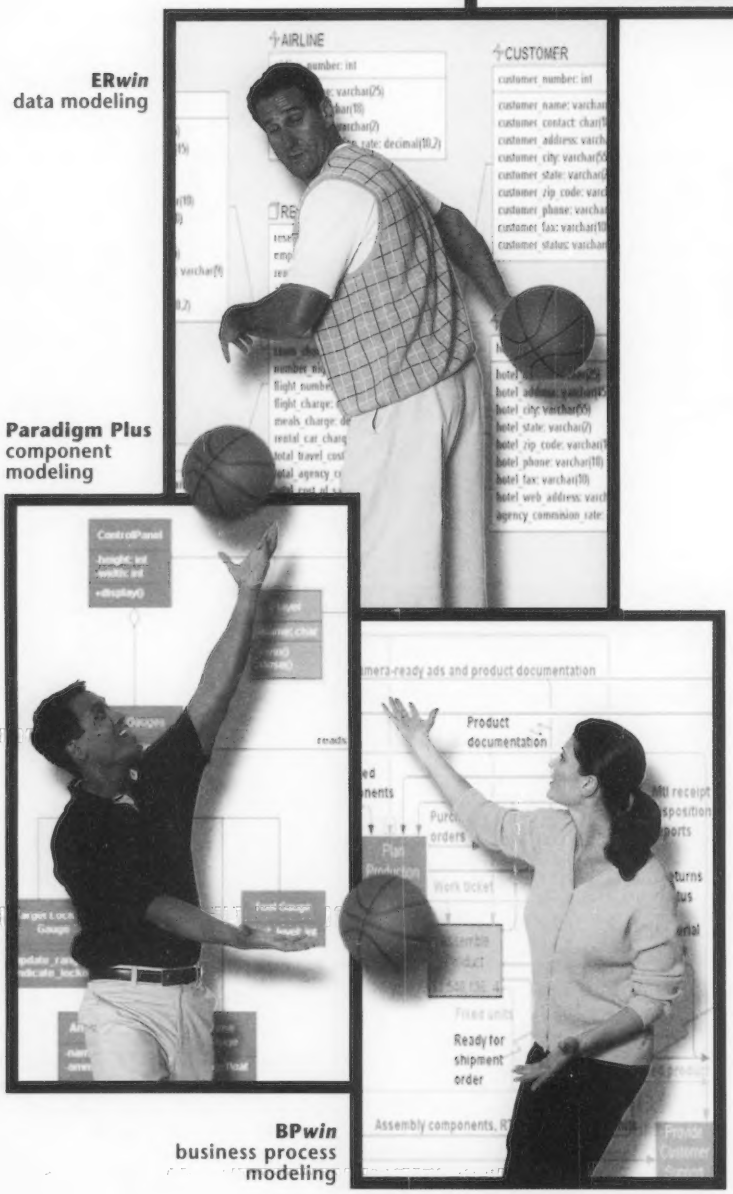

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NEW PRODUCTS

IMPULSE SOFTWARE INC. has announced Impulse 4.0, software for building electronic-commerce sites.

According to the Leander, Texas, company, the software was designed to work with existing Web sites and Internet service providers' setups. It includes a shopping-cart system, a credit-card verification and transaction module and order-encryption capabilities.

Users can publish product descriptions and price lists directly to the Internet, and the software can integrate with popular accounting programs for automatic price updates.

Impulse 4.0 costs $295.

Impulse Software
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www.impulsesoftware.com

LOTUS DEVELOPMENT CORP. has announced FastSite 2.0, software for publishing office suite files to an intranet, extranet or the Internet.

According to the Cambridge, Mass., company, the software works with files created in 25 different desktop applications, including Microsoft Office applications, Lotus SmartSuite applications or Corel Corp.'s WordPerfect.

It automatically converts files to Web-readable documents that include background designs, hyperlinks and Web navigation buttons such as "forward" and "back."

FastSite 2.0 costs $99.

Lotus Development Corp.
(617) 577-8500
www.lotus.com

PLANET CITY SOFTWARE has announced E-Comm-Kit, software that enables users to add basic electronic functionality to existing Web sites.

According to the Montreal company, the software was designed to work with existing back-office systems and includes more than 100 Web templates and icons. It ships with ready-to-post banner ads, a client database that tracks online customers, an inventory control system that monitors sales and product inventory levels and credit-card authorization facilities that use standard security protocols on the Internet.

E-Comm-Kit costs $49.95.

Planet City Software
(514) 844-6454
www.planetcity.com

REALWORLD CORP. has announced Expertise.LAN Version 5.5, Windows-based financial accounting software for building virtual storefronts.

According to the Manchester, N.H., company, the software comprises numerous modules that can be purchased separately or as part of an integrated system. The Expertise.Commerce module is a Java-based, self-serve Web retail order-entry application.

The Multi-Currency module eases international electronic commerce by supporting 20 different currencies per company and providing automatic booking to the general ledger.

Expertise.LAN costs $495 to $10,995 per module.

RealWorld
(603) 641-0200
www.realworld.com

SOFTQUAD INC. has announced XMetaL, an Extensible Markup Language (XML) and Standard Generalized Markup Language (SGML) content authoring tool.

According to the Toronto company, the tool provides authors with a word processing-like environment, multiple document views and context-sensitive property inspectors.

The user interface features customizable tool bars and tear-off menus. The Resource Manager provides drag-and-drop management of boilerplate text, document fragments, logos and macros. Users also can save SGML documents as XML.

XMetaL costs $495 for a single-user license.

SoftQuad
(416) 544-9000
www.softquad.com

Shell Canada discovered a great resource for putting a cap on IT costs.

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Part of the problem was due to the lack of an integrated system throughout the company — operations were performed on a variety of systems across different divisions. But Shell found a solution: they replaced these systems with enterprise software by J.D. Edwards, integrated seamlessly throughout their core business functions.

According to Paul Reynolds, Manager Business Systems, Shell Canada, "The solution not only met our business and user needs; it allowed us to reduce business transaction processing costs from $17 million down to $9 million. Reducing costs has allowed us to direct IT dollars to areas that benefit the customer as well as enhance shareholder confidence."

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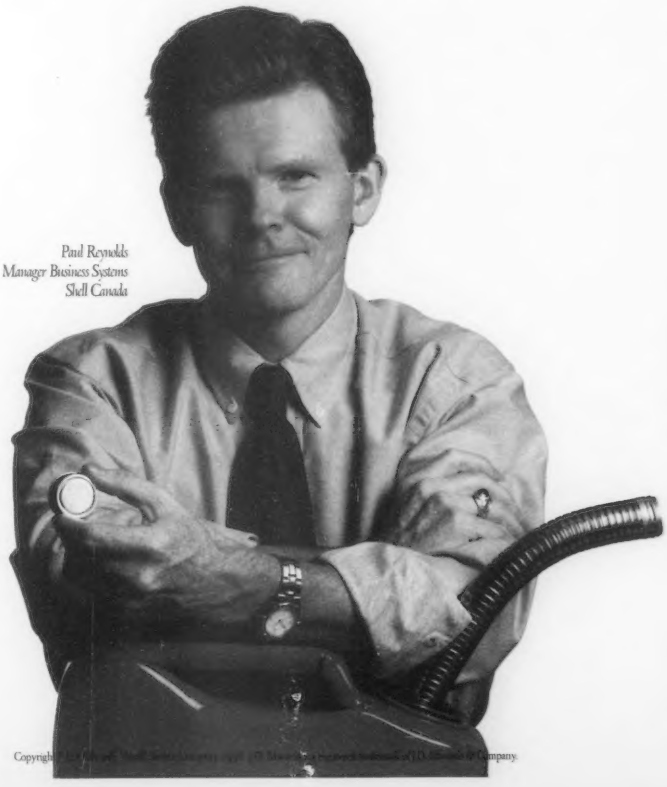
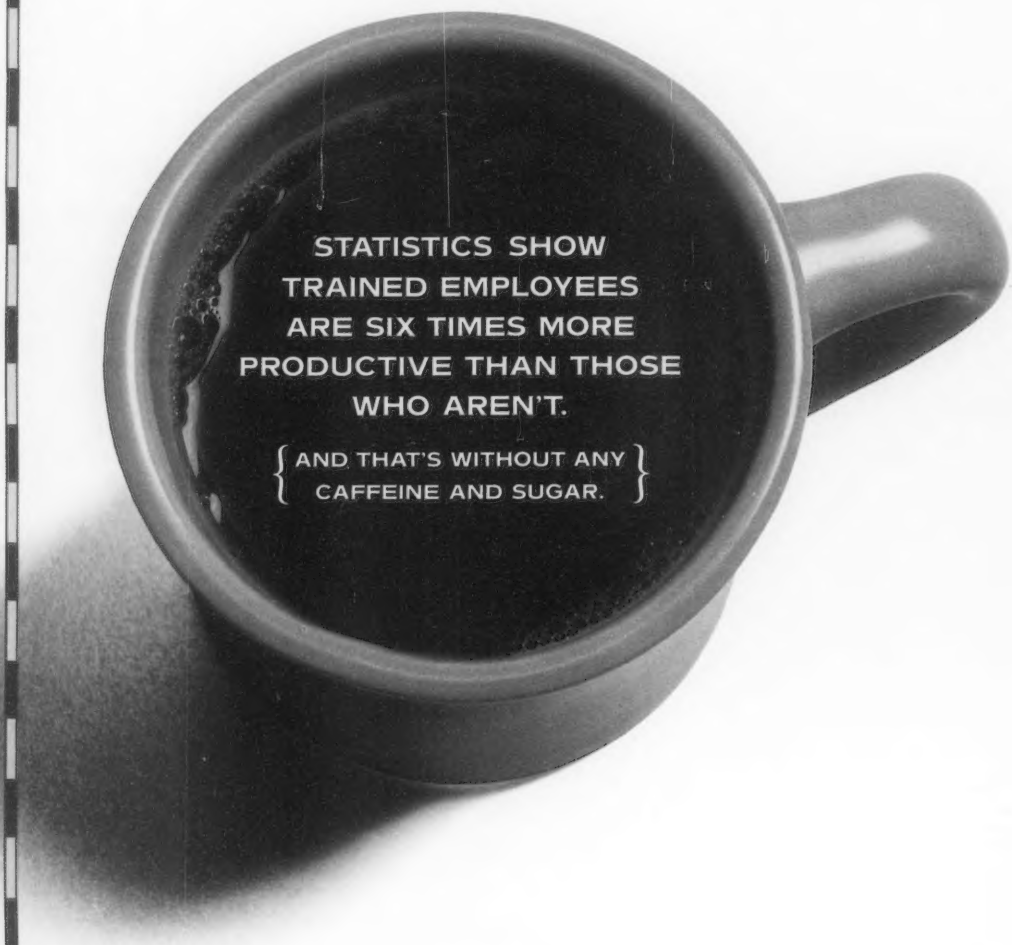
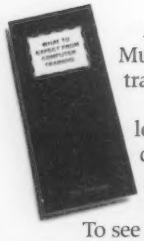
How it ought to be



Paul Reynolds
Manager Business Systems
Shell Canada





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The Enterprise Network

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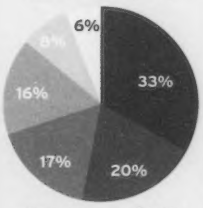
Briefs

Worldwide circuit switch market, 1998



Total revenue: $20B

- Lucent
- Siemens
- Northern Telecom
- Ericsson
- Alcatel
- Fujitsu

Source: Company reports and Punk, Ziegel & Co., New York

Real-time intranet

New York-based Inovie Software Inc. last week announced an upgraded version of its TeamCenter collaborative project management software. TeamCenter brings workgroups together over an intranet, allowing them to coordinate tasks efficiently in real time.

The technology is built on 100% Pure Java.

TeamCenter 2.0 now has a QuickView module, a cross-project view that lets managers and team members simultaneously browse and update information. It also has a rules-based E-mail notification system.

It will ship next month and will cost $95 per user for the client and $675 per workgroup server.

Post office update

ReSoft International LLC in New Canaan, Conn., has released Version 1.3 of PostMan, software that monitors and reports on electronic messaging activity in a CC:Mail DB8 post office.

The software is Web-enabled and gives administrators a graphical user interface to work with. It is available now on Windows 95 and Windows NT.

Pricing starts at $695 for one CC:Mail post office.

E-mail makes a health care call

▸ *Clinic provides long-distance help*

A Boston physician is building an E-mail-based global health care network in which a businessman in Tokyo with a sinus infection could seek care through E-mail, or a doctor in Houston could collaborate with researchers in South Africa via Internet mail.

Daniel E. Carlin, 39, an infectious disease specialist at the New England Medical Center in Boston, recently talked a Russian skipper, sailing solo in an overseas yacht race, through surgery to drain an abscess in the sailor's arm — all via E-mail.

But it was all in a day's work for Carlin's World Clinic Inc., formerly Voyager Medicine, which uses E-mail and the Internet to treat patients on ships and travelers worldwide.

World Clinic's first patients were professional mariners who communicated with Carlin via satellite systems that had emergency E-mail capabilities. World Clinic now treats rank-and-file travelers' more common ailments, including sinus infections and urinary tract infections.

Carlin said World Clinic is about to sign care contracts with some Fortune 500 companies that would like to receive health care coverage for traveling senior executives and expatriate professionals in about 26 countries.

Carlin discussed the concept with Computerworld senior writer Roberta Fusaro.

JERRY VALENTE

World Clinic's Dr. Daniel E. Carlin says the Internet – by providing an unlimited medical library – will do more for medicine than Gutenberg's printing press did

CW: Why did you create World Clinic? And how does E-mail fit into the program?

E-mail, page 61

Low-end switches bulging with extras

▸ *Users say they need education on new features*

By Bob Wallace

NETWORKING VENDORS are equipping their smaller switches with more bells and whistles in an effort to differentiate their systems in a fiercely price-competitive and overcrowded market. But some users aren't yet sure if these extra features are help or headache.

Features such as policy networking, different layers of switching, virtual LANs (VLAN) and Web-based management are becoming standard with low-end switches. For example, Cisco Systems Inc. recently introduced the Catalyst 4003, which includes VLANs, port aggregation and redundant load-sharing power supplies — advanced features and capabilities once found only in the big and expensive switches.

Industry experts suggest that vendors should focus on educating users about advanced features and functionality so those items can truly become product differentiators.

Switches, page 63

STELLA JOHNSON

Room units have edge in video

By Barb Cole-Gomolski

WHILE INDUSTRY watchers wait for the long-predicted surge in the desktop videoconferencing market, low-end room systems are quietly winning over companies.

These systems, sometimes called set-top boxes, came on the scene about two years ago and have been chipping away at both the desktop and high-end room systems market, according to analysts. Videoconferencing veterans PictureTel Corp. in Andover, Mass., and Polycom Inc. in San Jose, Calif., both now sell low-end room systems, for example.

Companies favor the small-group systems, which usually plug in to a television monitor and support as many as four conferencing end points, because they are more affordable and require less bandwidth than large room systems. High-end room systems cost about

Room videoconferencing, page 61

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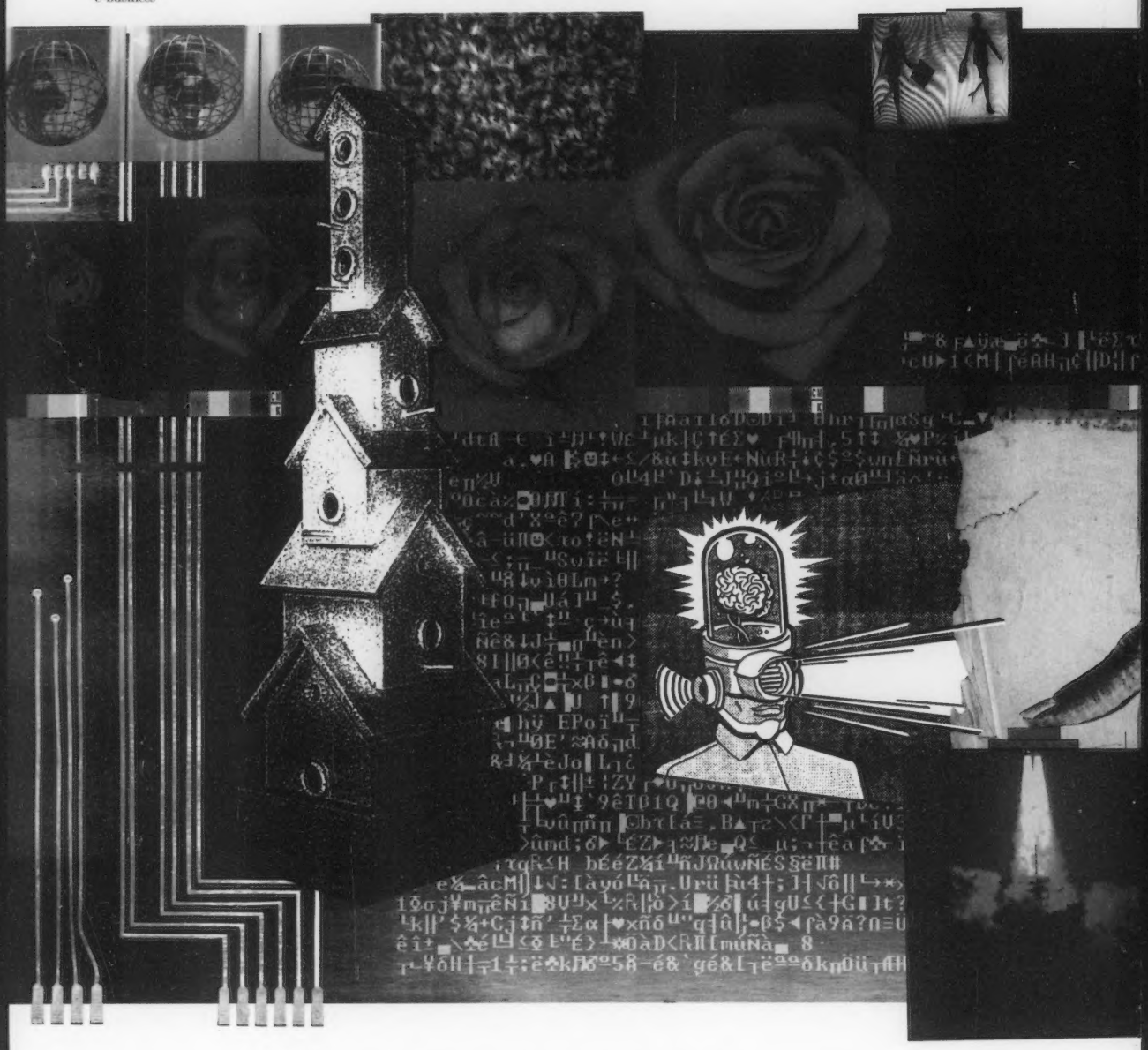

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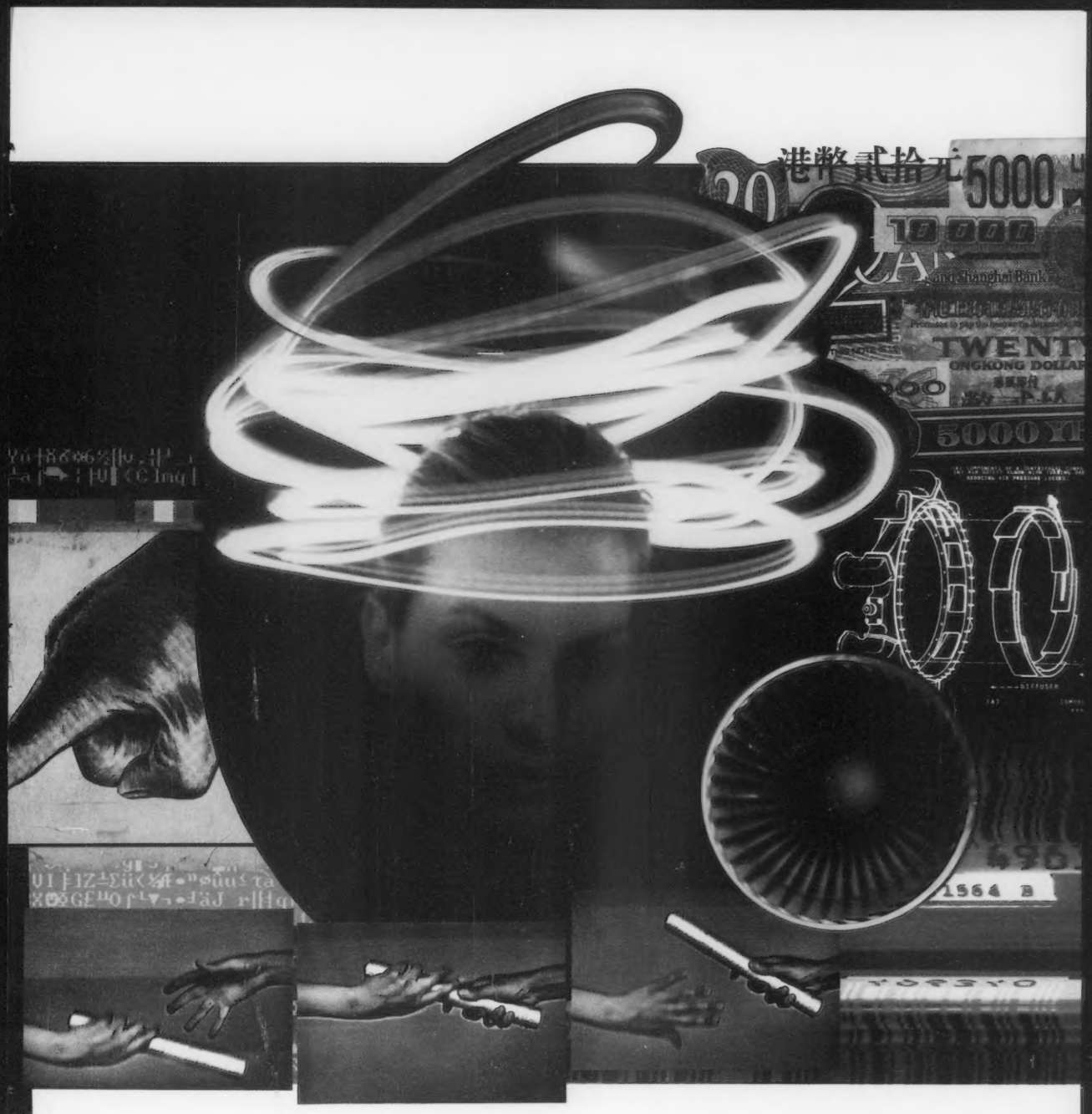

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Dun & Bradstreet

E-mail makes a health care call

CONTINUED FROM PAGE 57

CARLIN: When World Clinic was established in late 1996, E-mail was becoming an incredibly cost-effective way of updating and connecting with medical records. And when the boats got CompuServe links, they could drop me an E-mail if they changed locale and give me the heads up about what kind of medical maladies they might be sailing into. It became a logistical tool for providing care.

CW: What's it like to make house calls via E-mail?

CARLIN: It's very clear to me that it's much, much better when you can put your hands on a patient, read their body language, look in their eyes and assess their state of mind. But with distance care, we have to make up that deficit by doing two things: Collect as much detailed information from the patient as possible about what is actually going on. And before any crises develop, address and prepare for worst-case scenarios by collecting [baseline] data about the patient so you can rule [those scenarios] out first.

But what you lose in physical presence, you make up for with the extraordinary collection of information available to you via the Web. The Internet has made it possible to have information collection; you can clarify the situation with questions, consult with experts in a country and close in on a diagnosis.

CW: What is the role of E-mail and Web in diagnosing and treating illness?

CARLIN: The Internet will do more for medicine than Gutenberg's printing press did. Now we have a common digital language, which can operate independent of geography. Wherever there is a phone jack in the world, there is an unlimited medical library.

CW: But where are the limits?

CARLIN: Many countries don't have Internet connections. There are bandwidth issues. In many developing countries, the operators piggyback conversations on phone lines, which raises hell if you're trying to get an Internet connection. We're looking at the use of cellular phones [for sending and receiving E-mail].

CW: What has been the response from medical community about the use of E-mail and other Web technologies to provide care?

CARLIN: [They are] certainly more popular among younger physicians. The tricky part is to convince the guys who are running the institution, who are typically between the ages of 53 and 63. It's not part of their operating system. There is almost this feeling like "you young doctors are overvaluating this E-mail and Internet stuff, and in the final analysis it's all about the patient and the doctor." To which my answer is, 'You're absolutely right. But let's talk about how we can use the technology to make patients happy and get them information in a timely fashion.'□

Risky business

World Clinic uses E-mail to treat patients who are nowhere near a doctor, and the extreme case of guiding a Russian sailor — yachting solo — through surgery via E-mail was a good example of how the technology can be used in a desperate situation. But it isn't a good model for medical care, one doctor said.

E-mail is a widely accepted tool for physicians, said Edward W. Campion, a doctor and deputy editor at *The New England Journal of Medicine* in Boston. Most, but not all, doctors are comfortable with it and use it mostly for personal communications with colleagues, he said. But E-mail isn't used a lot in primary practice, he said.

The Web is a good resource for finding medical information, Campion said — when you know the source. Doctors particularly worry that a patient will E-mail a query or list of symptoms to an unknown party or search engine at a Web site. "That's a risky act, because there is no way of knowing where [responses] are coming from, who is giving the advice and what their motivations are," Campion said.

"The most effective doctor/patient communication is still over the phone," he said. — Roberta Fusaro

Study: Cell phone use doesn't affect brain waves

By Mary Lisbeth D'Amico
MUNICH, GERMANY

CELL PHONE junkies, take note: After a three-year study, a neurological clinic here last week said it found no harmful effects on human brain waves from cell phones.

The study, commissioned by Bavaria's Environmental Ministry, was carried out at the neurological clinic at the Grosshadern Hospital.

The study measured the effects on 39 mobile phone users in a variety of tests over a three-year period, according to a summary of the study results released by the Bavarian Environmental Ministry. Electrodes were attached to each participant, who received either a car telephone with an antenna or a mobile phone registered with one of two mobile phone networks in Germany.

Participants in the study — 21 women and 18 men between the ages of 16 and 58 — weren't aware of whether the cell phones were on or off during the tests.

The researchers found that the phones had no impact on participants' brain waves, whether the phones were on or off.

Many people have voiced concerns over the effects of electromagnetic waves on human health.

The researchers found that the phones had no impact on participants' brain waves, whether the phones were on or off.

The study is part of the Ministry's efforts to analyze what effect these electromagnetic fields have on humans and the environment.□

D'Amico writes for the IDG News Service in Munich.

Room videoconferencing

CONTINUED FROM PAGE 57

$40,000, while the low-end versions run about $10,000.

Desktop video systems also have not taken off largely because managing video across so many PCs over networks is daunting, and the desktop technology hasn't yet matured, analysts said.

"We didn't predict this [trend]," said Christine Perey, president of Perey Research and Consulting in Placerville, Calif. However, installing a low-end room system is proving to be a "convincing first step" for companies that are new to videoconferencing, she said.

Cybex International Inc., a Medway, Mass., maker of exercise equipment, installed three Polycom low-end room systems at its offices in Massachusetts, Minnesota and California so research and development teams could collaborate on new products. "It just seemed more feasible than [installing desktop videoconferencing]," said Michele DeMartin, a senior buyer.

If the company had gone with desktop systems, it would have run them over its wide-area network. However, the room system runs over an Integrated Services Digital Network, which is fast and was easy to set up, DeMartin said.

Manna Freight Inc. in Mendota Heights, Minn., installed several low-end room videoconferencing systems from Polycom because the desktop videoconferencing systems it tested over the Internet "weren't there yet in terms of performance," said Tom Dropik, director of information systems at the air freight forwarding company.

The units, which cost less than $10,000 each and were installed in several sales offices as well as the corporate office, are used for training and management meetings.

At Manna, the ease of managing a handful of room systems was less of an issue than performance, Dropik said. The only negative is that the small room systems are "less convenient than having videoconferencing available at your PC," he said.

Still, Dropik thinks that eventually the company will deploy videoconferencing at the desktop. "It may be a year or more, but that is probably what we'll wind up doing as desktop [videoconferencing] systems improve," he said.

Indeed, there's evidence that the rise of low-end group systems may be short-lived and that companies use them as an interim step toward desktop videoconferencing. Forward Concepts Inc., a market research firm in Tempe, Ariz., predicts that in the next five years, worldwide revenue for group systems will grow 11%, while revenue from desktop videoconferencing will rise 48%.

Andrew Davis, a principal at Wainhouse Consulting Group in Brookline, Mass., said installing small room systems today makes sense because "you can avoid a lot of technical issues." It's easier to route video traffic on your network when you have a collection of group systems vs. hundreds or even thousands of desktop systems, he said.□

Desktop or room system?

How desktop and room videoconferencing systems stack up

Desktop systems	Low-end room systems
Price: $800 to $1,600	**Price:** $10,000 to $35,000
Support multipoint conferences	Support multipoint conferences
Present "desktop" view of person on the videoconference	Present fuller view of people on the videoconference
Large deployments can require network upgrades	Impact on network is more predictable than with desktop systems
End user has constant access to it	System is shared within a department or company

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Switches loaded

CONTINUED FROM PAGE 57

"Layer 3 and 4 switching, Layer 4, VLANs and policy networking are the four hottest things, according to vendors," said Tom Nolle, president of CIMI Corp., a Voorhees, N.J., technology assessment firm. "[But] we surveyed 267 companies and found that in none of these areas did buyer literacy exceed 15%. Vendors have to do a better job of explaining these things."

NOT YET NEEDED

"It's nice to know the features are there, but they're things we don't yet have plans to use," said Steve Lopez, network manager at the National Board of Medical Examiners in Philadelphia. "All we use is the ability to set quality of service for traffic."

"We create a short list of basic functionality we want in a switch that vendor proposals must include," said James Ray, vice president of corporate systems and strategy development at office products giant Staples Inc. in Westboro, Mass. "If one doesn't have a basic function, they're knocked out. Exotic items only come into play when everyone has the basics."

And comparing extras can make an information technology manager's job tougher.

"Some switches are becoming so sophisticated that it's very difficult to compare 100 features and functionalities across multiple systems," Ray said. "And if nobody cares about the extras, how can they possibly be a differentiator?"

Still, one large user is taking advantage of the extra functionality now found in low-end switches.

"We use Web-based reporting for our stackable switches," said Alan Robson, network director of network systems at coupon maker Cox Target Media Inc. in Largo, Fla. The company also uses VLANs to create logical rather than physical workgroups.

"We're also starting to see low-end switches with redundant power supplies, an item most usually found with datacenter switches," Robson said. Cox uses this to prevent a power-supply failure from crippling part of the company's network, he said. □

NEW PRODUCTS

NETOPIA INC. has announced the R3100 ISDN Router, an Integrated Services Digital Network router for Internet connectivity.

According to the Alameda, Calif., company, the router can acquire its IP address automatically from the Internet service provider. An integrated Dynamic Host Configuration Protocol server automatically allocates IP addresses on the LAN. Users can upgrade to Digital Subscriber Line, frame relay and other broadband technologies as their bandwidth needs increase.

A router that supports up to 12 users costs $410.

Netopia
(510) 814-5100
www.netopia.com

PROGRESS SOFTWARE INC. has announced IPQoS, a "quality of service" tool that measures resource availability and performance throughout a network.

According to the Bedford, Mass., company, the tool collects statistics on TCP/IP ports such as Simple Mail Transport Protocol for sending E-mail and on application servers for groupware, electronic commerce and the Web.

It also monitors Windows NT, NetWare file systems and NetWare Services.

Statistics are aggregated in reports that relate performance and availability to service-level agreements.

Pricing starts at $995 for a 10-device license.

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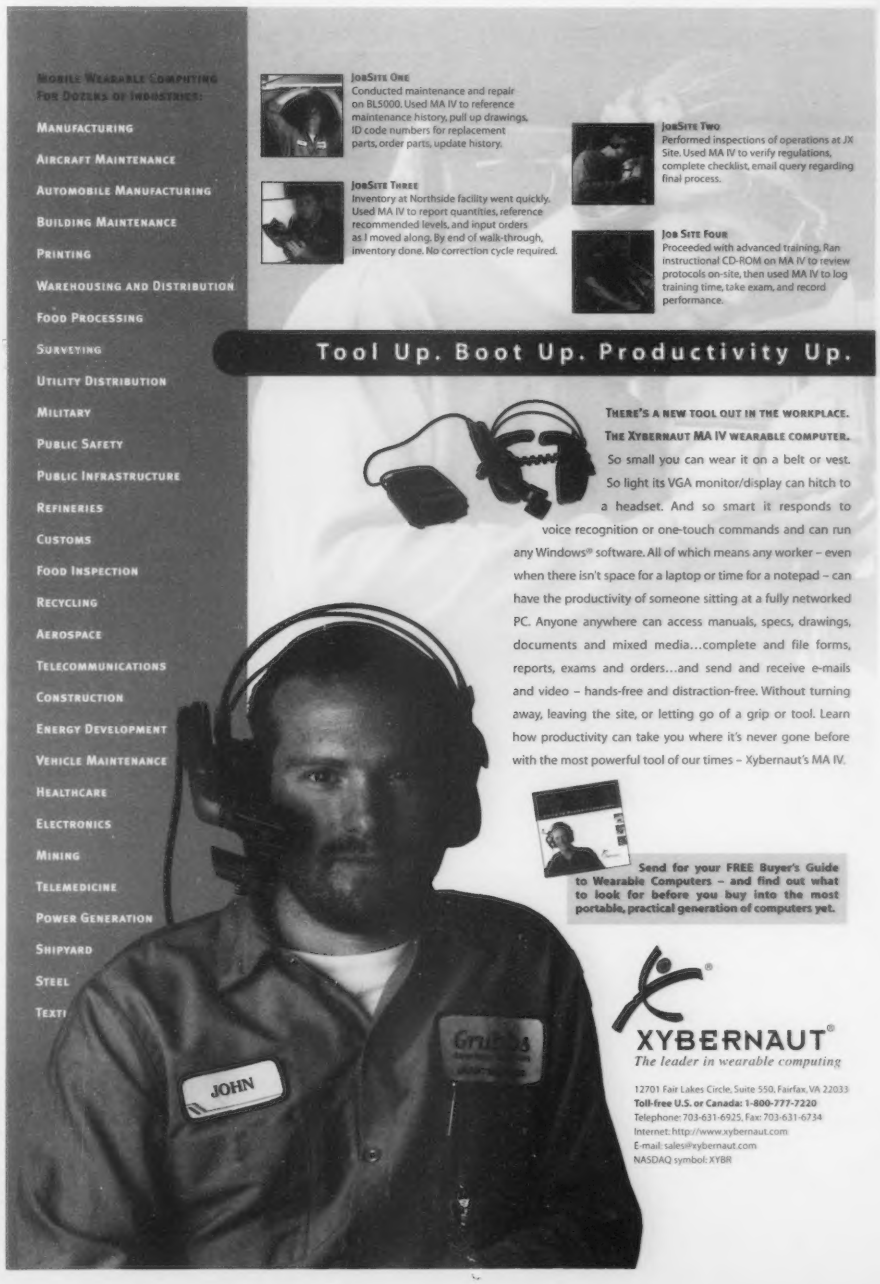

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Software

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Briefs

PeopleSoft acquisition

PeopleSoft Inc. last week announced a deal to buy Distinction Software Inc., an Atlanta developer of PC-based software for supply-chain planning. The stock-swap transaction, valued at $5 million to $10 million, isn't due to be completed until the second half of next year. But PeopleSoft, in Pleasanton, Calif., said limited shipments of a combined version of the companies' demand planning applications will start by April. PeopleSoft and Distinction also plan to start cooperating on development, sales and customer support.

Medicaid processing

Systems Consulting Co. in Portland, Maine, this week will ship CARS/Medicaid, a new module in its CARS/IS suite of medical software. The system automates the processing of Medicaid claims, calculates rebates and creates payments for both federal and state Medicaid programs. It requires an Oracle Corp. database and Windows client. Pricing starts at $100,000.

Accounting deal kept

Oracle Corp. last week said it is extending through March 1999 the availability of a fixed-price package of accounting software and consulting services for small and midsize companies looking to install year 2000-compliant financial applications. The $300,000 bundle was originally due to be withdrawn in January 1999. Oracle also is adding a similar $400,000 package for government agencies.

WHAT'S ON YOUR PC?

Average dollar amount of unauthorized software on a corporate PC: **$405**

Where it's mainly procured: **on the Web**

Base: Survey of 150 asset management projects with 500 to 10,000 PCs over three years (1996 to 1998)
Source: Micropath Inc., Bellevue, Wash.

Database accelerates data

▸ *Keeps oft-used data in memory for fast access*

By Stewart Deck

A NEW FLAVOR of database hit the shelves last week, and users who have tested it say it's like adding a turbocharger to their current databases.

The latest release from Mountain View, Calif.-based TimesTen Performance Software, a 2-year-old Hewlett-Packard Co. offshoot, is a main-memory database. TimesTen 3.0. puts heavily used data in a data manager from which it can be accessed quickly (see chart).

By placing just the data manager in the system's main memory, data can be accessed in the blink of an eye. That's somewhat different from the attempts made in the past by Digital Equipment Corp. and IBM, in which the size of the databases sometimes overwhelmed the amount of memory available. Other large relational databases don't use TimesTen's approach for just that reason. One potential use for TimesTen is as a database for running some Web sites, where increased speed is critical.

"The good part for us is that speed doesn't mean expensive custom development," said Jan Zawadski, a beta tester and director of research and development at San Diego-based Triport Inc., a developer of marketing automation tools. "When you're talking about a Web site's database, every second matters because visitors want to see immediate feedback. We query results in a matter of milliseconds instead of minutes."

Brian Kalita, an analyst at Aberdeen Group Inc. in Boston, said TimesTen 3.0 will be "especially popular with Web-based organizations where speed is vital."

Sergi Lopatin, manager of Andersen Consulting's Center

TimesTen, page 67

How TimesTen works

1. Heavily used data sits in a data manager in main memory
2. A query comes into the applications server
3. TimesTen decides whether the answer is part of that data collection
4. If so, data gets pulled quickly from main memory
5. If not, TimesTen calls the enterprise database for the answer

WAREHOUSE TOUR

SAP's Business Information Warehouse software includes:

- Built-in multidimensional analysis engine
- Automated data extraction and loading routines
- Predefined analysis cubes for storing data
- Repository for informational metadata
- Excel-based reporting and analysis tool
- Data warehouse management tools for IT

SAP warehouse system draws mixed reviews

By Craig Stedman

FOUR MONTHS after it became available, SAP AG's data warehousing software is getting a mixed reaction from R/3 application users.

Some early adopters, such as Georgia-Pacific Corp., expect the Business Information Warehouse package to improve their ability to analyze financial records and other important corporate information produced by their R/3 transaction systems.

R/3 DATA ANALYSIS

Other users said they will look elsewhere for R/3 data analysis, at least until SAP expands the capabilities of its warehousing bundle.

For example, Farmland Industries Inc. in Kansas City, Mo., is initially building its own data warehouse to separate business reporting and analysis from the R/3 servers that run the $9.1 billion farming cooperative's finance systems and other corporate applications.

Dick Weaver, technology manager for Farmland's petroleum and crop production units, said the company still wants to use Business Information Warehouse as part of a planned effort to standardize operations on SAP as much as possible. But first SAP has to expand its Oracle Corp. database support

SAP, page 67

USER REVIEW▸ *Microsoft SQL Server 7.0*

Price/performance worth the upgrade

By Kevin Burden

SQL SERVER 7.0, with its improved performance and scalability, will make the industry stand up and take notice of Microsoft Corp. as a serious player in the database market. At least that's the message from four users who have worked with it since its first beta in 1997.

Although the users said SQL Server 7.0 is a significant advance over SQL Server 6.5, they also said some competitors still have an edge in certain features. For example, SQL 7.0 still can't perform enhanced data loads like products from Oracle Corp. and Informix Corp., said Lee Parrish, development manager at Commercial Financial Services Inc. in Tulsa, Okla. And the conversion to SQL 7.0 isn't a slam-dunk for anyone because the physical layout of the server files has changed from previous versions.

But in the end, SQL 7.0's superior price/performance ratio and the availability of trained staff won over these users. "Hey, it's not Oracle, but SQL 7.0 shows enough maturity that we can confidently stay on Microsoft. Besides, I defy anyone to find an Oracle [database ad-

SQL 7.0, page 67

"This is a rare occasion where an expenditure in software will save us a lot in the hardware area."

– Chris Horrocks, CIO, Commercial Financial Services

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SQL 7.0 worth the upgrade

CONTINUED FROM PAGE 65

ministrator] at a reasonable rate," said Dave Lish, vice president of information systems at Transamerica Flood Hazard Certification in Hasbrouck Heights, N.J., a division of Transamerica Corp.

"A 100% performance boost over 15,000 searches a day means a great deal to us and our customers."

– Dave Lish, Transamerica Flood Hazard Certification

NOTICEABLY FASTER

Raw speed is what's driving users to upgrade to SQL 7.0, despite predictions from analysts — such as Mitch Kramer at Patricia Seybold Group in Boston — who say its greatest lure may be new features that will lower the cost of implementing data warehouses and forever change the data warehousing market.

"The speed [improvement] is so noticeable, some of our users actually asked us what we did to the system," said Jonathan Kaley-Isley, director of information technology at Relocation Tax Services LLC in Denver.

SQL 7.0 isn't necessarily faster than Oracle or Informix, but it's now in the performance race with the addition of the row-level locking functionality that those competitors already have.

Row-level locking lets the database dynamically resize itself when it needs more space. Without it, the database can bog down as it tries to back itself out of trouble, a problem Kaley-Isley said happened too often with his 170G-byte database.

Dynamic locking was the first feature Lish tested, and he saw response times cut almost in half. His 72G-byte database contains flood-certification records on 100 million residential and commercial properties and is queried about 15,000 times a day by mortgage lenders who need flood certification information. "A 100% performance boost over 15,000 searches a day means a great deal to us and our customers," Lish said.

Dynamic locking also helps improve SQL 7.0's scalability, which had been subject to criticism in the past, according to Kaley-Isley, who said the function allows the database to dynamically allocate its own resources. Kaley-Isley said his database grew from 4G bytes to 170G bytes with minimal intervention. "I've just added disk drives. SQL 7.0 automatically discovers them and says, 'Yeehaw, got another gig.' [Version] 6.5 couldn't do that."

SQL 7.0 also is stacked with new and updated utilities to make it more suitable for large databases. Commercial Financial Services expects SQL 7.0 to extend the life of its hardware because the redesigned query tool will let the collection agency reduce the number of indexes in its database. Commercial's data warehouse had been limping along under SQL 6.5, according to CIO Chris Horrocks.

Horrocks is running three servers and says a 35% storage reduction on each is realistic. "For us, that is like having the equivalent of four servers, which is a savings of a quarter of a million dollars," Horrocks said. "This is a rare occasion where an expenditure in software will save us a lot in the hardware area."

Ease of use has always been Microsoft's hallmark, "but SQL 6.5 seems like it was an awful lot of work now that we're using 7.0," Kaley-Isley said. "It doesn't eliminate the need for a [database administrator], it just makes our job a lot easier."

Many functions that database administrators manually performed in 6.5, such as database consistency checks, now are done automatically and on the fly in 7.0. Lish said a full consistency check of his database under 6.5, including checking the index, would last more than 60 hours. Under SQL 7.0, it's completed in seven to 10 hours and doesn't require human intervention.

Not everything about SQL 7.0 ran smoothly for these users. Each reported some difficulty in transporting their data over to SQL 7.0, even though it came from SQL 6.5.

That's because Microsoft changed the physical layout of the server's files, making everyone go through a conversion. "There were a lot of utilities we needed to update — [Microsoft Data Access Components], OLE [for databases], etc. — before our data would convert correctly. The process certainly wasn't as clean as it could have been," Kaley-Isley said. □

SAP warehouse gets mixed reviews

CONTINUED FROM PAGE 65

to include Informix Corp.'s products, he said.

Farmland, which uses a version of R/3 tailored for oil and gas companies, also is waiting for more automated extraction routines that can pull data out of those applications. "It's as if SAP released a superific 32-bit game machine but only gave us one game [for it]," Weaver said.

The homegrown data warehouse is due to go live this month, he added. Farmland hopes to install Business Information Warehouse by April and then run the two side by side before eventually phasing out the custom software.

SAP has delivered "everything we need to meet our requirements," said Catherine Szpindor, senior manager of applications development at Georgia-Pacific's paper division.

Business Information Warehouse, which was released in August, is a package of tools for building and using data warehouses that can pull data from R/3 and other transaction systems (see chart, page 65).

SAP executives weren't available last week to comment on the status of the warehousing rollout. The German company previously said that it expects to have at least 160 users signed on by year's end.

Georgia-Pacific, a $13 billion conglomerate based in Atlanta, is one of those customers. The company's paper division is running a small pilot application with the warehousing software and next April plans to start a wider rollout tied to an upgrade and expansion of its R/3 applications.

SAP has delivered "everything we need to meet our requirements," said Catherine Szpindor, senior manager of applications development at the paper division. The half-dozen business analysts using Business Information Warehouse like what they have seen so far, she added.

EASIER REPORTS

For example, it's much easier to create reports with the new software than with the combination of spreadsheets and R/3's built-in reporting tools that the analysts rely on now, Szpindor said.

Jim Shepherd, an analyst at AMR Research Inc. in Boston, said user interest in Business Information Warehouse has been high, although that's partly because the reporting software that comes with R/3 "is so bad that anything looks like an improvement."

One R/3 user that passed on Business Information Warehouse is AlliedSignal Inc.'s diesel-engine turbocharger division in Torrance, Calif. Instead, it's rolling out a series of packaged data marts developed by Influence Software Inc. in Sunnyvale, Calif.

Business Information Warehouse still must be set up by a data architect, said Jeff Smith, worldwide vice president of information technology at the AlliedSignal unit. "We wanted more of a packaged system." □

Alpine getaway for Linux lovers

By Mary Lisbeth D'Amico
MUNICH, GERMANY

IN WHAT some may see as the ultimate combination of work and play, users of Linux are being offered a chance to learn more about the operating system next August while hiking the Bavarian Alps.

Interested attendees are being told to bring a laptop computer and a pair of comfortable hiking boots to the weeklong gig, which will likely take place Aug. 9-15, 1999, according to Electric Lichen LLC, the U.S. Internet consulting firm that's sponsoring the trip.

Participants will take part in outdoor Linux lectures by day and make frequent nighttime visits to "Bavarian brew pubs," according to information posted on a special Web page set up for the occasion. There are even tentative plans for the group to observe the solar eclipse that will take place Aug. 11.

Users already have shown great interest in the event, according to Electric Lichen.

But not all Linux users are enthused about combining beer and business.

One user, responding to a Web site that posted news of the tour, sent the following reminder: "Friends don't let friends hack drunk."

For more information on the tour, see *www.electriclichen.com/linuxbierwanderung.* □

D'Amico writes for the IDG News Service in Munich.

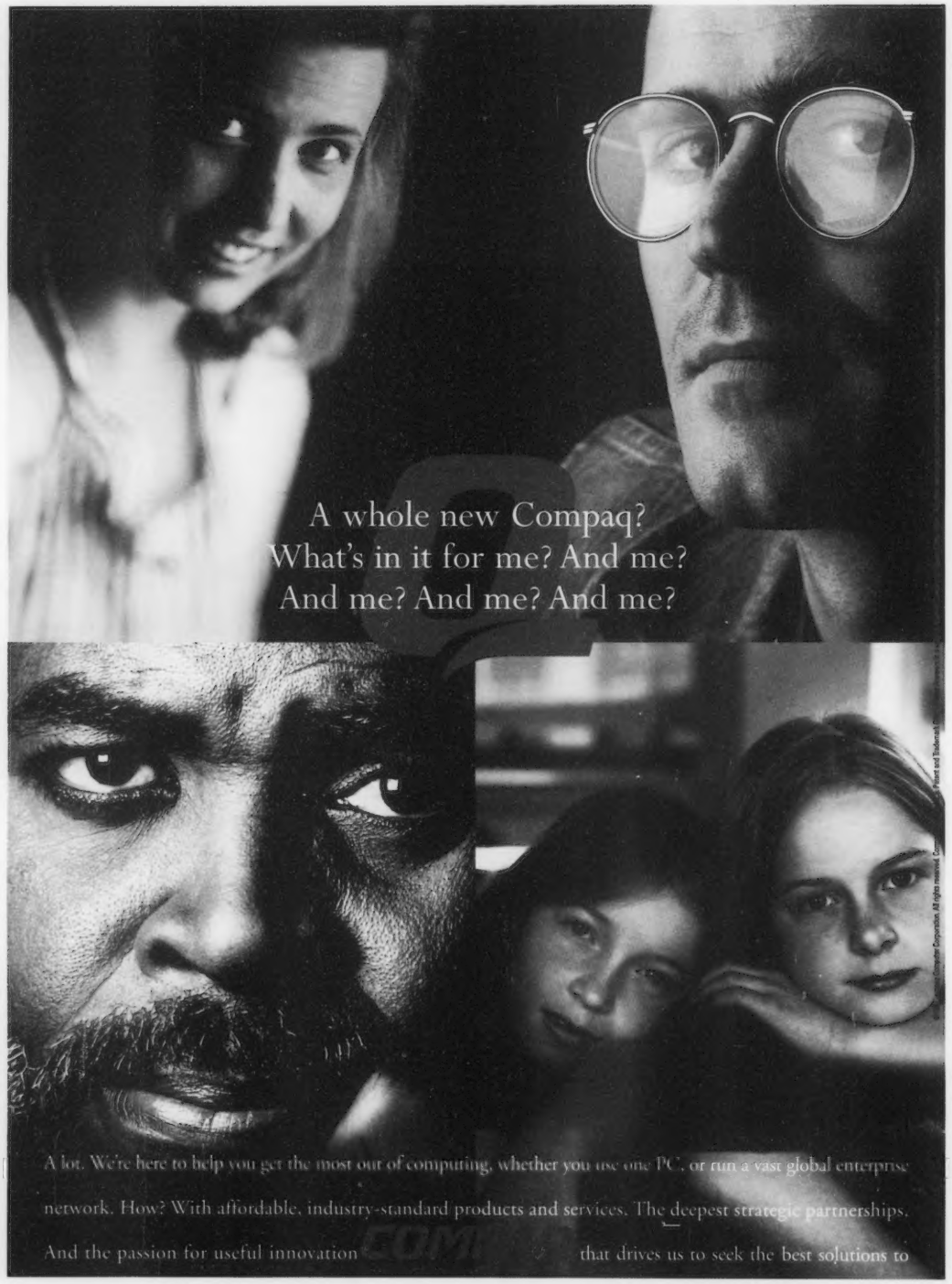
TimesTen accelerates data

CONTINUED FROM PAGE 65

for Strategic Technology Research, said he saw query response times shortened by as much as 30% when he tried the database. But, Lopatin said, he had to undertake some tricky maneuvers when he ported data to TimesTen from databases with vendor-specific features, though moving everyday Open Database Connectivity and SQL-based data worked easily.

TimesTen's latest version also adds support for two 64-bit Unix platforms: HP-UX and Solaris™ 7. And it includes support for data replication and client/server remote queries. It also increases scalability to four-processor Unix servers. Pricing for the system starts at $20,000.

Brian Murphy, an analyst at The Yankee Group in Boston, said telecommunications providers that have cooked up their own customized data management schemes to handle fast toll-free queries might find this type of product a good fit for their needs. "In the past, the physical constraints of memory have held this type of thing back," Murphy said, but TimesTen has hit the market at a good time because memory can now be added to a system relatively cheaply. □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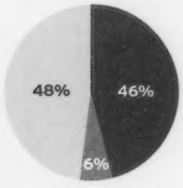
Briefs

How will the year 2000 affect your spending on desktop PCs this year?



Base: Survey of 50 Fortune 1,000 companies

Source: Forrester Research Inc., Cambridge, Mass.

Dell drops prices

Dell Computer Corp. has cut prices for its line of OptiPlex corporate desktop systems in response to cuts from other PC makers. It cut prices 7%, to $1,999 on its Pentium II-400 GX1P; 9%, to $1,299 on its Pentium II-350 GX1; and 11%, to $849 on its Celeron-333 G1.

New Microsoft Java

Microsoft Corp. has announced a Pure Java upgrade to its 32-bit Java virtual machine for Windows. The Java Virtual Machine for the Microsoft Windows Operating System supports the Java Native Interface to agree with Sun's Java specification. Microsoft was ordered to do this in a ruling by the San Jose, Calif., U.S. District Court, which said it had illegally extended Sun's Java language.

Jaguar goes for HP

Jaguar Cars Ltd. has bought more than $8 million in Unix workstations from Hewlett-Packard Co. More than 250 of HP's Visualize graphics workstations with PA-RISC chips will power high-end visualization applications that will help Jaguar engineers do predictive testing and crash simulations before building physical prototypes.

Technology that follows the herd

▸ *Animal trackers use handheld in Africa*

By Matt Hamblen

SOUTH AFRICAN BUSHMEN may not be able to read or write to share their knowledge about animal tracking, but they can — and are — by using PalmPilots equipped with a special program.

For the past two years, two members of the Khoisan and Xhosa tribes have been recording animal behavior using the 3Com Corp. handheld devices with software, called CyberTracker, developed by an English-speaking expert tracker. The bushmen click on screen icons of black rhinos, antelope and other game when they see one or its tracks and then on subsequent icons to indicate whether the animal is eating or mating.

The PalmPilots are linked to a Global Positioning System, which automatically records on the device the location of the sighting. The information is downloaded later to a PC that prints a detailed map of the data, which park officials at Karoo National Park in southwestern South Africa may be able to use to prevent poaching or to see if there's sufficient plant life to provide rare animals with food.

"Instead of a scientist making observations for five days once a year, we have enormous amounts of data for animal preservation," said Louis Liebenberg, the South African tracking expert who, along with developer Lindsey Steventon, developed CyberTracker.

Liebenberg said he got the idea to employ bushmen because they have studied the animals and the same terrain for centuries. Though he doesn't speak the native tongues of the Khoisan and Xhosa tribes, he

Following the herd, page 70

PHOTO: IDEA

CyberTracker co-developer Louis Liebenberg (center) taught James Minye (left) and Karel Bernardie to use the PalmPilot

APPLIANCES

Will 'thin' work for E-mail?

By Roberta Fusaro

CORPORATE USERS may accept a network appliance for printing or data storage, but it may take a while before they use dedicated "thin servers" for messaging, analysts said.

A thin server bundles hardware, software and operating system software dedicated to a specific task, such as handling E-mail. Typically, the machine is easy to set up and lets end users create and manage mail accounts with just a browser. By contrast, a Unix or Windows NT-based mail server requires hours to set up and install and must be managed by Unix- and Windows NT-trained staff.

Because the concept of thin servers for messaging is new, user awareness is very low, said James Staten, an analyst at Dataquest in San Jose, Calif.

Appliances, page 71

Heat is on Unix/NT integration

By Jaikumar Vijayan

The growing influence of Windows NT in some Unix shops is pushing vendors to provide new ways of integrating the two types of machines.

Last week, for instance, Sequent Computer Systems Inc. in Beaverton, Ore., announced a version of a hybrid system that lets users run both Unix and Windows NT applications in the same box. Sequent's second-generation NUMACenter 2.0 integrates a four-processor Intel Corp. Windows NT server and a Non-Uniform Memory Access (NUMA) Unix server in the same enclosure.

The idea behind such integration is to ease management of the two environments by giving users features such a shared storage,

Integration, page 71

Storage option can be easy

▸ *Network-attachable arrays are quick fix*

By Nancy Dillon

WHEN DANA LEDBETTER arrived at the accounting firm Lesley, Thomas, Schwarz & Postma six months ago, she knew she was looking at a storage problem. She was charged with adding numerous applications to one workhorse Windows NT server, but the server had only 9G bytes of mirrored disk.

With another tax season approaching, Ledbetter had to act quickly. "My first thought was to add an external RAID array," said Ledbetter, technology manager at the Newport Beach, Calif., firm. "But that meant adding a controller card and [128M bytes of] RAM to the server. . . . And my theory is that if a server is stable, don't tinker unless you have to."

Dana Ledbetter: **"Adding the [NAS] array was like adding external RAID without all the work"**

Ledbetter decided instead to go with a network-attachable storage (NAS) array from Procom Technology Inc. in Irvine, Calif. The cost of the NAS device, called the NetForce 100, was the same as the price quote she got for the entire server-attachable RAID array package — about $8,000.

NAS devices connect directly to a user's network via a LAN interface such as Ethernet. NAS devices function as

Storage, page 70

Following the herd

CONTINUED FROM PAGE 69

said he was able to train the two bushmen, Karel Bernardie and James Minye, relatively easily by showing them how to touch the screens for 100 different types of sightings.

"It has really ennobled their whole profession. Before, they never got any appreciation because they couldn't document their sightings, and nobody had the time to listen," Liebenberg said. Liebenberg won a Rolex Award for Enterprise in October from the Geneva-based watchmaker.

Liebenberg and Steventon are seeking profitable commercial uses for their product so they can take it to market. They're searching for companies that want to build specialized applications, such as chemical companies tracking the growth of a weed called ray grass that is threatening crops in Australia.

They said even retail suppliers might want a simple handheld application for crews to keep store shelves stocked. Using icons could cut the training time in the trucking industry, where driver turnover is high, Liebenberg said.

Even though the CyberTracker application may be unique, the developers must contend with as many as 10,000 other developers vying to build applications for handhelds, analysts said.

Symbol Technologies Inc. has the biggest head start on PalmPilot applications for corporate uses, with a bar-code scanner attached to one end of the device, analysts said. Symbol also has developed more rugged handhelds for reading bar codes, but they tend to cost about $5,000, compared with only $1,000 to $2,000 for a specially equipped PalmPilot.

"Using the Palm is a much lower cost of deployment and total cost of ownership than a heavy device," said Jill House, an analyst at Framingham, Mass.-based International Data Corp. (IDC), a sister company to *Computerworld*.

The market for lightweight handhelds used in industry is one "that a lot of users and vendors have interest in, but it will take a little while for wide-scale adoption," House said. IDC estimates the U.S. industrial market for handhelds this year at 870,000 devices, a number expected to nearly double by 2002, House said.

Analyst Ken Dulaney at Gartner Group Inc. in Stamford, Conn., said Windows CE-based hardware is better suited to rugged vertical industry uses than lightweight PalmPilots. However, Liebenberg said, PalmPilots have been sturdy enough for the bushmen, surviving drops, dust and heat.

Meanwhile, the CyberTracker PalmPilot product is catching on among other bushmen animal trackers. In recent months, Liebenberg showed CyberTracker to African bushmen in the Central Kalahari in Botswana and Namibia, and "they picked it up immediately," he said. □

Storage

CONTINUED FROM PAGE 69

a server in a client/server relationship. They have a processor and some type of operating system and can process file I/O protocols such as the Unix's Network File System and Windows' Server Message Block.

"Adding the [NAS] array was like adding external RAID without all the work," Ledbetter said. She said she attached her RAID 5, 24G-byte Procom array to the network in a half-hour.

Mark Ferelli, an analyst at Strategic Resource Corp. in Santa Barbara, Calif., said the most popular uses of NAS are for general-purpose file sharing, thin-server applications and storage management. "[NAS] offers a way to free up server resources for tasks such as E-commerce, E-mail and clustering," he said.

Bob Katzive, an analyst at Disk/Trend Inc. in Mountain View, Calif., said the bulk of the NAS market will be in the Windows environment. He said ease of installation makes NAS a clear choice for small companies with small information technology departments.

"But even large companies with good IT departments can use [NAS] to quickly add storage when individual departments demand it," he said.

John Nichols, an information applications manager at AT&T Corp. in Morristown, N.J., recently installed an 8G-byte NAS device because it provided a speedy way to add storage he could control himself.

"In a large corporation you have network administrators who deal with the big picture. But I'm the guy who has to deal with the people in my group and their problems," said Nichols, who installed a Snap Server from Meridian Data Inc. in Scotts Valley, Calif. "I'm not privy to the greater network, but with [the Snap Server], I can change permissions and security as I need to. . . . It has helped me get closer to my users." □

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Appliances

CONTINUED FROM PAGE 69

The model works best for simple Internet-specific E-mail tasks, such as routing, reading, saving and deleting E-mail, he said.

One roadblock to corporate adoption, Staten said, is that users are trying to enhance their mail systems with calendaring and scheduling applications, which lack standard interoperability protocols. That makes them too complex for a thin server to handle, he said. Until those features are standardized, thin servers will appeal most to Internet service providers and Internet mail users.

Sean Farshchi, vice president of infrastructure technology and services at DHL Worldwide Express in Redwood City, Calif., agreed that thin servers are too limited for large corporate networks that need load-balancing and complex messaging features. He said thin servers "would just be another proprietary environment to maintain."

But those issues didn't stop Mirapoint Inc. in Menlo Park, Calif., from launching the first thin-server-based mail appliance for large businesses two weeks ago. The server has an embedded proprietary operating system and application software compatible with most popular Industry Marketing Assistance Program, Post Office Protocol-3 and Simple Mail Transfer Protocol messaging clients.

Beta testers say the Mirapoint appliance is scalable and easy to administer

And last month, Intel Corp. released E-Mail Station, a thin messaging server for small business.

Beta testers said the Mirapoint appliance is scalable, easy to administer and secure.

"You don't have to log in, so you can't compromise security," said Prabakar Sundarrajan, vice president of research and development at Web hosting service Exodus Communications Inc. in Santa Clara, Calif. Instead, the servers are placed behind the corporate firewall for protection, are easy to manage and scale up to serve thousands of users, he said. □

Integration

CONTINUED FROM PAGE 69

single log-ons, a single point for monitoring the two platforms and a single view for performance monitoring purposes, Sequent said.

"From a management standpoint, these capabilities are a real advantage," said Michael Doyle, manager of technology integration at Millipore Corp. in Bedford, Mass.

The pharmaceuticals, bioanalysis and microelectronics company is moving to a mixed environment, where it plans to use Windows NT as its application development platform and Unix in the database server role.

Unlike the first version of the product, Sequent's NUMA-Center 2.0 provides tighter integration between the two operating systems, said Joe Barkan, an analyst at Gartner Group Inc. in Stamford, Conn.

"They have added some tools that make it look like you are managing one large server rather than multiple partitions within a single server," he said.

The new system also allows shared storage and backup facilities between Unix and Windows NT. The Advanced Detection Availability Manager lets users monitor the two environments from a single console. □

S H O R T

Intel license

Intel Corp. is giving a royalty-free license for its Pentium processor design to the U. S. government, which will manufacture custom-made chips for space and defense purposes. The design license will go to the Department of Energy's Sandia National Laboratories, which handles the government's microelectronics research and development. Sandia plans to create a radiation-hardened Pentium processor for satellites, space vehicles and defense purposes, according to a statement. Fast design changes have left the government unable to afford to design integrated circuits that can withstand radiation, the statement said. Intel had a similar arrangement in the 1980s for other microcontrollers.

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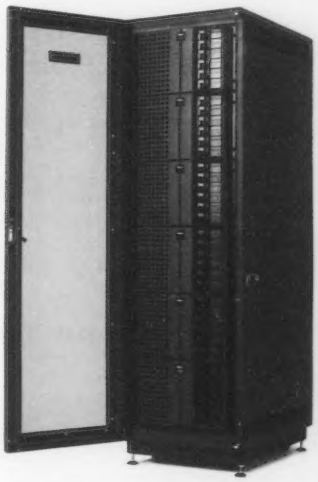

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– Mark, age 17, Cisco Networking Academy student

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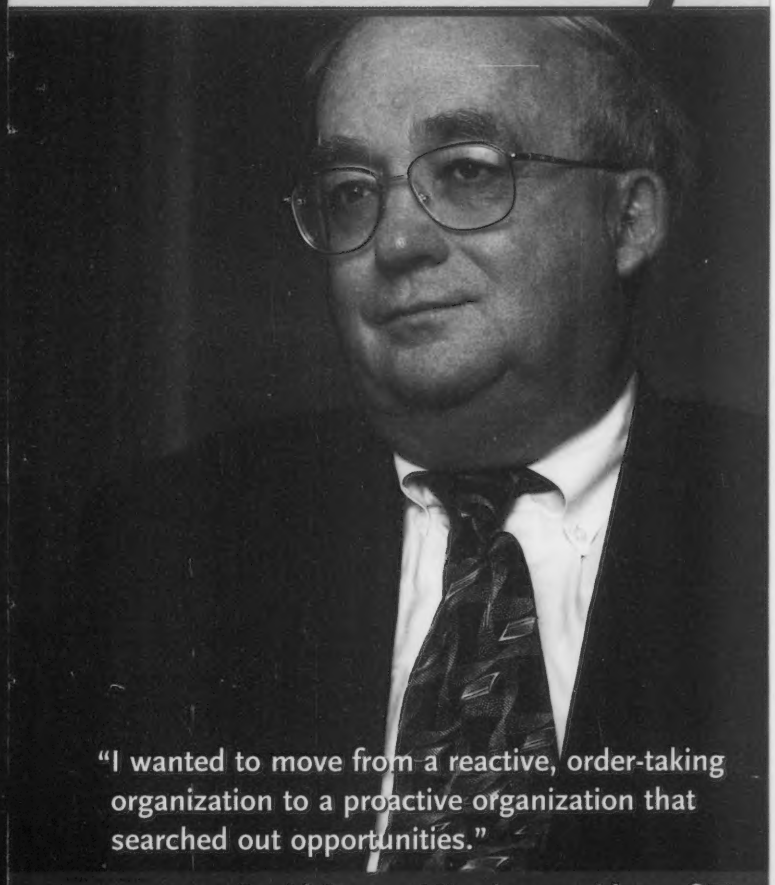
Managing

3M's Leadership Journey

After two false starts, 3M is finally getting its IT staffers to cut "Mother Mining's" apron strings and begin acting like leaders

By Allan E. Alter



"I wanted to move from a reactive, order-taking organization to a proactive organization that searched out opportunities."

— David Drew, 3M's vice president of IT

Lyla Campbell was shocked. "These are our managers?" she asked herself.

It was Day 1 of a leadership development seminar, and the message — take responsibility, take initiative — wasn't sticking with the audience of eight 3M Co. managers. "I remember hearing people saying things like 'We can't do that. . . . We need to ask permission to do this,' " says Campbell, who was sitting in as a trainer. "Finally, I said: 'Don't you think [vice president of information technology] David Drew wants us to come to him with ideas and suggestions? I don't think he's looking for permission to do things.' "

Inertia isn't a problem only at "Mother Mining," as 3Mers call their nearly century-old company. In information technology hierarchies everywhere, problems linger, business opportunities evaporate and talent goes untapped because managers and staff wait to be told what to do. When the boss says he wants people to show initiative, nobody budges. Either they don't believe it, are afraid of crossing another executive or feel so powerless they assume it's futile.

After four years of hard work and two false starts, Drew finally is beginning to break the ice jam. 3M's experience shows that committed coaches and executives can start to develop leadership qualities if they provide inspiring vision and values, steady commitment and ongoing education and dialogue.

3M's Leadership Journey, page 76

3M's Leadership Journey

CONTINUED FROM PAGE 73

A VP'S INSIGHT:

"I couldn't do everything myself."

"I've described myself as a reformed command-and-control person. I usually get a good reaction to that," Drew says. He rose to the top as a traditional, hands-on IT manager. "If there was a problem, I would go there no matter where it was," he says. Then, in 1994, 3M's often competing IT groups were consolidated into one large, worldwide organization.

When Drew was put in charge, he realized his leadership style — which was workable in his old, 50-person unit — now was inadequate.

Drew was seeking a better way to lead when he and members of the IT operating committee (ITOC), made up of 3M's top 18 IT executives, went on a three-day Tom Peters retreat in the fall of 1994.

Peters' message — inspire a shared vision, enable others to act, encourage, challenge and be a model — inspired Drew. Before a coffee break, he was asked to write a vision statement. That's when it all came together.

"I wanted IT to become a core competency at 3M. I wanted to move from a reactive, order-taking organization to a proactive organization that searched out opportunities," Drew says. He wanted staffers to stop fighting about technology and refocus on business.

"I realized I couldn't do everything myself. . . . Management isn't able to achieve ongoing excellence. It has to come from the organization," he says.

A FIRST ATTEMPT FAILS:

"The reaction was, 'Well, so what?' "

To inspire others, the rest of the ITOC and other senior IT managers were sent to the Peters program. Then, in 1995, 1,000 IT staffers were dispatched to a one-day program called "Leadership is Everyone's Business."

But instead of inspiring, the program brought mostly shrugs.

"The reaction in our group was, 'Well, so what?' " recalls David J. Putrich, then manager of an engineering software development group. Campbell, who helped set up the sessions, was appalled.

"Everyone believed in the principles [presented in the program], but the one overriding comment I heard was, 'I won't do it until I see everyone else do it.' "

This was no time for a setback. For the first time, 3M was losing IT personnel to other Twin Cities companies. The consolidation and a layoff sent shock waves through the IT organization.

Meanwhile, the company was missing its financial goals. Soon, 4,000 people were whisked away in the spin-off of Imation Corp., the maker of computer diskettes and other storage devices. Mother Mining had always taken care of its many lifetime employees. But that era was ending – and employees were scared.

The question now was, "What next?" Drew asked ITOC member Robert Roepke (rproepke@mmm.com) to find the answer.

MARK LUINENBURG

A Personal Leadership Curriculum course helped Teresa Oliphant erase career frustration in 3M's IT organization

LEADERSHIP FROM HR:

"It has to start with me."

Roepke looks like a page off the same Post-It Notes pad as Drew. Both have spent more than 30 years at 3M and still wear a suit and tie. But while Drew is a soft-spoken introvert, Roepke is an extrovert who not only runs 3M's IT education and consulting services but also the Minneapolis suburb of Chaska, Minn., where he's been mayor for 16 years.

"It's a town with a lot of development and change going on. I have a chance to build community. What's the difference with what we were trying to achieve with IT?" Roepke says.

Roepke says he and Drew realized "anything we put in place [had to be] an ongoing process of continuous learning and development." Fortunately, there were fire-in-the-belly people in Roepke's group who could go the distance.

> *"If you don't follow through and keep doing things, it loses its effect and you are back almost where you started."*
>
> *— David Drew*

One was Campbell (lacampbell3@mmm.com). After the "Leadership is Everyone's Business" program, she helped start a small cabal. "If we hear someone say, 'Not until I see everyone else do it,' we tell them 'It has to start with me,' " she says. And as leader of a team examining skill and career growth among IT staffers, she became even more convinced of the importance of taking responsibility for one's own career. Roepke asked Campbell to create a leadership curriculum for 3M's 3,000 IT staffers.

The ITOC also decided managers needed something to help them practice and encourage the new kind of leadership.

Mike Marois (mjmarois@mmm.com), who was responsible for the technical training curriculum, volunteered to create that something.

For him, this was a chance to change 3M's culture. "I believe in a form of leadership that's very benevolent and caring. . . . I wanted to do this, and I thought I could succeed," he says.

Working independently but under Roepke's eye, the two gathered teams of like-minded souls and set off.

By the summer of 1996, Campbell's team had rolled out the 17 90-minute "Personal Leadership" classes; a year later, they began offering two programs lasting two full days. The classes now are open to non-IT personnel. In the fall of 1996, Marois' group was ready to launch the "Positional Leadership Initiative" (PLI), an intense, three-month series of weekly seminars for eight invited IT managers.

HELPING OTHERS LEARN:

"Get them to ask bigger questions."

Marois' pilot seminar got off to a rocky start. The managers were skeptical about changing Mother Mining. Marois tried to instruct them on leadership techniques, which didn't go over well. "I wanted to tell them what to do," he recalls.

But in the 12th week of the 16-week pilot program, the lessons began to take hold.

As Mark Skeie, a financial systems manager, summarizes it: "We [managers] are the water boys, the facilitators. Once you cross that threshold, you feel very good about it. You see people grow [and] become inspired."

What changed? The trainers stopped training; Marois and the other instructors learned that managers learn best from one another.

Stimulating a soul-searching dialogue was what worked.

"For me, the 'Aha!' moment was realizing we don't need to focus on teaching people the tools but to get them to ask bigger questions," notes Michael Ayers, one of the PLI instructors.

In the four PLI seminars since, Marois and the three other instructors have fine-tuned their dialogue-based approach. Among the things they've learned to do are the following:

- **Provide enough time:** Sessions must run at least three hours because the good stuff always happens after 90 minutes has passed.
- **Be flexible:** Although there's a lot of ground to cover, they don't stick to a hard-and-fast timetable. What takes one group a week to grasp — say, "systems thinking," or how one IT decision affects others — might take longer for another group.
- **Watch and listen:** The PLI instructors put a premium on observing participants. Each session starts with a check-in, where participants talk about what's on their mind. That helps instructors pick up the group's mood. There also are three instructors in each class because one person can't spot all the gestures, emotions and hesitancies taking place.

For example, Ayers says, an instructor once posed a question with the "right" answer already in mind. He praised the first response, which was the one he wanted.

He didn't notice that everyone else clammed up, but other instructors did. "No one wanted to volunteer anything else, since 'the person in charge' had

apparently gotten what he wanted," Ayers says.

• **Carry a big tool box:** Instructors assign readings and pick as needed from a large number of dialogue-inspiring exercises.

These build critical leadership skills — such as listening and attentiveness, scenario planning and an appreciation for differences in perception — while launching discussions.

Ayers recalls a manager practicing the "information wheel." She was talking about a workplace problem, breaking down her message into five kinds of information. She had gotten through the first three segments — actions, data and thoughts — when her partner interrupted. The group urged her to continue and move on to feelings and wants. When she finally finished, she said "I've worked here for 20 years and I've never been able to deliver a whole message before!" The breakthrough led to a wide-ranging discussion about miscommunication, diversity, job satisfaction and effectively dealing with customers.

PERSONAL LEADERSHIP:

"I'm appreciated instead of reprimanded."

Meanwhile, the Personal Leadership Curriculum, with its steady stream of short classes, provided a de facto ongoing education program. It had 2,500 registrations in its first 15 months and won kudos from attendees.

Of all the classes, the two-day workshop "Eagles: Soaring to New Heights of Personal Achievement," may have had the most impact. Teresa Oliphant was a frustrated supervisor when she signed up for it. She had set up a PC support department but grew restless and got in trouble for starting development projects outside her job scope. She felt management didn't understand her.

Cathy Muckala, her instructor, challenged Oliphant to consider how she could improve her situation. Oliphant made lists of her strengths and of what she wanted from her job, interviewed other 3M IT staff to learn what they did and then created an ideal job description for herself. She found an existing position that nearly matched it, then convinced her boss to shuffle responsibilities so she could create such a post for herself.

"Now the work I am doing is within my [job] scope and I'm being appreciated instead of reprimanded for doing it. I can make a greater contribution," Oliphant says.

CONCLUSION:

"These are problems that are never really solved."

Oliphant's experience is just the kind of performance-enhancing transformation Drew hoped to see. But have there been enough of them to make a difference?

The answer is a qualified "yes." Besides the individual success stories, PLI has created a small coterie of evangelist-managers determined to apply the new leadership approach. Once they introduce it, the staff doesn't want to go back to the old way. Indeed, when Putrich was promoted, his staff told his boss they wanted a replacement like him.

3M Medical Markets' Cheryl Hilgemann, an internal customer of IT, says she has worked with several IT people who have participated in the programs. "There's been a real positive influence," she says. "The IT organization has aligned itself much closer to their clients."

There are indirect success indicators. 3M's once-growing IT turnover rate dropped into the 5% range. A survey last month of PLI alumni reveals that most respondents changed their leadership style, witnessed changes in their workgroups and saw some improvement in 3M's IT environment.

MOREONLINE

For a more detailed look at 3M's Personal Leadership Curriculum and a link to a paper co-authored by Robert Roepke on the leadership initiative at 3M, visit *Computerworld online.*

www.computerworld.com/more

But not all program participants were so inspired.

Alumni speak of the many command-and-control managers still embedded in 3M's IT organization; some doubt PLI's dialogue format would work with those managers.

Peter Atkins, an ITOC member who feels 3M's leadership efforts aren't making enough progress, is concerned that much has been invested in a program that is reaching so few managers. (Roepke and Marois respond that the PLI instructors work only part-time on the program and that the annual cost to the company is only about $200,000.)

Atkins' concerns may soon be moot: After three more "journeys," PLI will move to a new phase, Marois says. The 12-week program will be phased out, and Roepke and the alumni will create a new curriculum and services for managers, such as internal consulting. Earlier this month, Drew met with alumni to discuss 1999 goals.

Asking when 3M can declare victory is probably the wrong question. Like chronic diseases, inertia, passivity and resignation never are cured — only fought off. And so 3M's leadership work will go on. "These are problems that are never really solved," Drew says. "The reality is, if you didn't have programs like the leadership initiative, you'd have an unbelievable mess. If you have programs and do them well, you make progress." □

Alter is Computerworld*'s department editor, Managing. He can be reached at allan_alter@cw.com.*

MARK LUINENBURG

Mike Marois volunteered to create a leadership curriculum for 3M's IT staff. "I wanted to do this, and I thought I could succeed."

What leadership means at 3M

What is leadership, exactly? Robert Roepke, Mike Marois, Lyla Campbell and others at 3M have spent months defining it — and it's the antithesis of command and control. Anyone can show leadership, but for managers it takes on additional responsibilities.

Personal leadership includes:

- Taking responsibility for understanding yourself, developing your potential, managing your career and aligning what you want to achieve with your skills with where 3M is going.
- Working effectively with others through cooperation and an understanding of differences in perceptions, personalities and work styles.
- Learning to be resilient during times of change by managing your emotions, staying flexible and developing self-confidence.
- Showing initiative by being quick to take action, doing more than is required and finding or creating new opportunities.

Leadership as a manager also includes:

- Helping others develop personal leadership skills.
- Abandoning command-and-control management and leading by collaborating, coaching and facilitating.
- Taking responsibility for the culture and performance of your group.
- Moving from enforcing compliance with job requirements to creating relationships that inspire participation in achieving goals.

ED YOURDON

THE MORAL DIMENSION OF Y2K

It's now late December, and you're on your way out the door, ready to enjoy the holidays before 1999 begins.

But it may be your last holiday for quite a while. For most of us in the year 2000 world, 1999 will be the year of living dangerously.

If you're working in a bank, an insurance company or a telephone company, your year 2000 project is supposed to be wrapping up its remediation efforts now.

You're supposed to be spending all of next year on testing. After all, your CEO is telling Wall Street analysts that year 2000 remediation is "substantially complete," and the chief financial officer has studiously avoided documenting any bad news in the Securities and Exchange Commission's 10-Q statement.

But from my travels across the U.S., I know that there are a lot of organizations where that rosy, optimistic outlook isn't accurate. I've listened to a number of year 2000 managers tell me, within the past few months, "There is absolutely no way we can finish in time."

The dilemma of the doomed year 2000 project, or the year 2000-remediated system being rushed into production before testing is finished, will force some of us to make some difficult ethical decisions next year. We can't abdicate responsibility for the decisions that need to be made in those year 2000 projects, even if we don't have the equivalent of a Nuremberg Trial to pass judgment on those decisions.

If year 2000 turns out to be a minor hiccup, then the Nuremberg reference will be heavy-handed. But if year 2000 turns out to have life-and-death consequences, then many of us will face the most difficult moral and ethical decisions we've ever made. We'll be hearing lots of advice from our managers, political leaders, friends and families about what we should and shouldn't do. Rather than try to tell you what you should do about your year 2000 obligations, I suggest that you read the codes of ethics compiled by the two most prestigious computing societies in the U.S.: the Association for Computing Machinery (ACM), and the Institute of Electrical and Electronics Engineers. They're posted on the Internet — at *www.acm.org/constitution/code.html* and *www.computer.org/tab/seprof/code.htm*.

They're too detailed to discuss at length here, but I'd like to list 13 of the 24 "moral imperatives" from the ACM code:

- **Contribute to society and human well-being.**
- **Avoid harm to others.**
- **Be honest and trustworthy.**
- **Strive to achieve the highest quality, effectiveness and dignity in both the process and products of professional work.**
- **Acquire and maintain professional competence.**
- **Know and respect existing laws pertaining to professional work.**
- **Accept and provide professional review.**
- **Give comprehensive and thorough evaluations of computer systems and their impacts, including analysis of possible risks.**
- **Improve public understanding of computing and its consequences.**
- **Access computing and communication resources only when authorized to do so.**
- **Articulate social responsibilities of members of an organizational unit and encourage full acceptance of those responsibilities.**
- **Manage personnel and resources to design and build information systems that enhance the quality of working life.**
- **Articulate and support policies that protect the dignity of users and others affected by a computing system.**

The irony is that if we computing professionals had insisted on following that code of ethics, we might have avoided the year 2000 problem altogether. But that's water under the bridge; the only relevant question is whether we intend to pay any attention to them in the remaining 383 days before the Big Day. All of us consider ourselves moral and ethical people — it's simply a matter of which ethics we choose to embrace. I may not be able to memorize the entire ACM list, but I don't think I'll be able to live with myself in the post-year 2000 era if I can't follow at least the first three moral imperatives.

What about you? I urge you to think about this now, because if delays and problems occur with your year 2000 project, the pressure to compromise your principles may increase as we move into 1999. □

Yourdon heads the year 2000 service at Cutter Consortium in Arlington, Mass. His most recent book is Time Bomb 2000. *His Internet address is ed@yourdon.com.*

f.y.i.

Think in reverse on embedded systems

If you have an embedded system with a year 2000 problem, don't tackle it the way you might approach other information technology projects, advises Andy Kyte, an analyst at Gartner Group Inc.

"It's wrong to use an IT methodology to tackle an embedded system problem," Kyte says. Instead of the normal year 2000 routine of fix first, replace if you can't fix, and circumvent if all else fails — you should take the opposite tack, he says.

Speaking at Gartner's October IT Symposium in Orlando, Fla., Kyte suggested circumventing as many problems as possible. For example, steel mills can move their normal August shutdown to year's end in 1999 to help customers stockpile products in advance and ease into the millennium. Hospitals can plan to perform only emergency medical procedures in January 2000.

YEAR 2000

Your IT operational plan should mirror that, Kyte says. Rather than have huge batch files scheduled to run during the date-change weekend, why not reduce the load or power down?

In fact, powering down as many systems as possible will automatically circumvent most of your embedded problems, he says, because most embedded-chip compliance problems are transient. That means they have problems with events that begin in 1999 and continue into 2000, but if an event they control begins and ends in 2000, they can handle it. "The great universal hardware fix will work in many cases," he says. "Turn it off. Turn it on again [after the date change] and see what happens."

When you plan work-arounds, realize that many may already be in place, he says. Many embedded systems have broken down before, and shop floor managers and engineers have found ways to cope. Ask what they've done in the past when various products haven't worked, and plan to do the same again.

For embedded systems you can't circumvent, the next step is to replace. Replacing is often cheaper than fixing, Kyte says, particularly considering the tax deductions you can take for capital investment vs. service costs.

Finally, Kyte says, fix embedded systems only if there's no alternative.

— Kathleen Melymuka

Review Center

Operating systems

THE NT FACTOR

FOUR MANAGERS TALK ABOUT THEIR OPERATING SYSTEM MIX AND HOW NT HAS BECOME A FORCE

By Tim Ouellette

COMPUTERS ARE JUST TOOLS. And one tool can't fix every business problem. So even as many vendors promote their server operating system as the Swiss Army Knife of the IT world, bristling with options and gizmos, information technology managers instead have been busy matching server operating systems to the right task. For example, common choices managers make are Unix for high-end processing, NetWare for file and print and Windows NT for serving office applications.

In fact, the server operating system's technology features and benefits are less of a factor in the decision process than the specific application it's hosting. And making a decision on an operating system can depend just as much on nontechnology issues such as a company's existing platform and skill set, administration needs, budget limitations and corporate culture. That's why research firm International Data Corp. in Framingham, Mass., a sister company to *Computerworld*, predicts that platforms such as NetWare will hold their own because of their large and loyal installed base, while both Unix and NT will continue to see rapid growth in the near future.

Computerworld conducted interviews with managers at four companies to see how they chose their server operating systems and what they expect to do in the future, including wrestling with the popularity of NT.

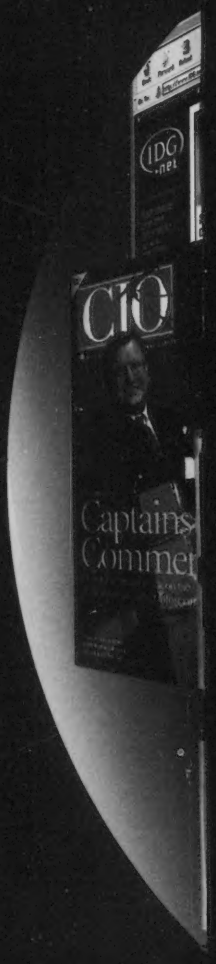
The NT factor, page 80

IS manager Frederick Wagner acknowledges NT's growing role at his law firm Richards, Watson & Gershon, but he still prefers NetWare

The U.N. has a charter.

Democracy has the

Constitution.



The Information Age

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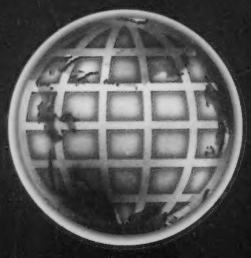

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Words have the power to unite, to define, to set a course. And when words appear between the covers of IDG publications, they have an even greater power: they influence the most critical economic force in the world today – the technology buyers driving the Information Age.

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Answers for the Information Age

THE NT FACTOR

CONTINUED FROM PAGE 77

ARCADIA FINANCIAL

Minneapolis
Ron Groves, vice president of information resources management
Environment: three AS/400 servers, 20-plus NetWare servers, three NT servers, one Unix server

Smart investors diversify, as long as they know to turn to their best bet when the chips are down.

Arcadia Financial runs a mix of Unix, NT and NetWare servers but relies on its AS/400 servers to run its main applications.

The reason: The company has grown up using the AS/400 as its core system but recognizes that certain applications and operations are best-suited to other platforms. For example, Unix runs an industry-specific loan application, NT handles some Internet and workgroup database duties, NetWare runs the company's communications network, and the AS/400 handles most core business and database applications.

So even though Groves says he would like to centralize more on his AS/400s, "We are always willing to use the best solution out there without excluding any options," he says.

Arcadia buys auto loans from 10,000 auto dealers across the U.S., then services the loans directly with car buyers. Its 1,400 employees are in 18 locations nationwide.

Like many IT shops today, staffing concerns have played a significant role in platform choices. Because the majority of Arcadia's 50 IT staffers are trained in AS/400 skills, the firm has to choose carefully when bringing a new platform into the mix.

For example, when Arcadia wanted an industry-specific autodialing application for its loan business, the best available system ran on Unix. Groves worked out a deal where the application vendor supported the server and code 100%, so that no one on-site has authority to use the system.

"When we use other platforms, we want a package that is supplied and managed by the vendor from top to bottom," Groves says.

In the future, Groves says, he hopes to hire an on-site engineer trained to manage that application and to bring Unix skills and experience to his staff.

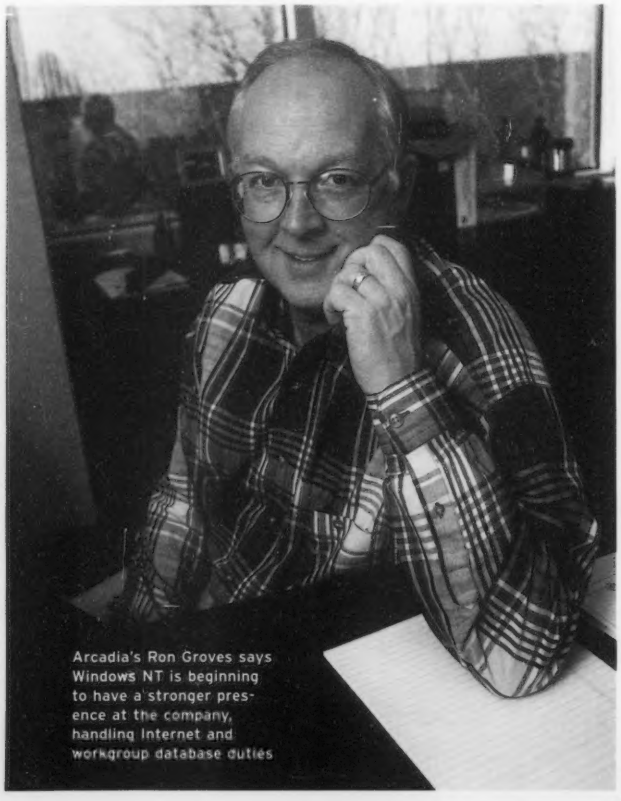
NT also has begun to have a presence at Arcadia. One database application for a small group in the company runs on NT because IBM hasn't created a good enough version for the AS/400, Groves says. And in the future, some company Web servers may run on the Microsoft platform.

Finally, the best overall solution to manage the network interaction between Arcadia's sites has been NetWare, Groves says. Arcadia runs the GroupWise E-mail package and uses Novell Inc.'s ManageWise for network management and administration, remote PC control at some smaller sites and software distribution.

Still, "the AS/400 is our workhorse," Groves notes. "We are familiar with the technology and see other application platforms like Unix and NT as point solutions."

And he warns that replacing older systems such as the AS/400 with a newer system just for the sake of it can be dangerous.

"To look at a separate platform for the sake of looking — it makes it seem like the grass is always greener on the other side," Groves says. "When you move to another platform, there are always problems."



Arcadia's Ron Groves says Windows NT is beginning to have a stronger presence at the company, handling Internet and workgroup database duties

RICHARDS, WATSON & GERSHON

Los Angeles
Frederick Wagner, information services manager
Environment: eight NetWare servers, one IBM AIX server, three NT servers

If it was up to Frederick Wagner, the choice of a server operating system would be an open-and-shut case: Novell's NetWare.

But a mix of application needs and corporate directions are making coexistence with NT a reality.

The 70-attorney law firm, with 120 employees and four offices on the West Coast, is a longtime NetWare shop. The legal accounting system has run on a Unix server running IBM AIX because it wasn't available for NetWare.

But now, that accounting package, called Elite, is best run on the NT platform, Wagner says. So the company will migrate to an NT system with Microsoft's SQL Server database management system. Until then, NetWare will run the rest of the business.

But with the entrance of NT, Wagner says company management wants to move to a completely Microsoft architecture, something Wagner says he wants to avoid. Management wants the move because it believes a majority of sites are moving to NT, he says, and Novell will have trouble staying in business within a few years.

Wagner says NetWare is more reliable, better supported and easier to manage than NT. One reason he likes NetWare, he says, is that NetWare doesn't require an inefficient swap file on the boot drive like NT. Also, NT requires separate add-ons to defragment disk drives and remotely manage servers, both of which are basic features of NetWare. With such requirements, NT seems more like "warmed-over Windows 3.1, not a real server

operating system," Wagner adds.

Because his small IT staff has years of NetWare experience, it won't be an easy switch to NT. The staff will have to depend on outside help for some of the work. In fact, the AIX accounting package has been managed by outside consultants for the four years it has been in place, a classic example of the application driving the operating system choice.

So though Wagner says he would like to keep the GroupWise E-mail package, Elite on NT uses Microsoft Exchange E-mail to communicate its status. And because NT workstations won't be able to use their existing IPX-IP gateways for Internet access, they will move to an NT product.

The result will be an influx of NT servers, he expects, because the Exchange E-mail and Elite accounting NT servers will probably be followed by a SQL Server for document management.

"It will definitely be a mixed bag, but we'll take it a step at a time, getting everything working before we commit it to production," Wagner says.

The NT and Novell servers will coexist on the same 100Base-T switched backbone, with IP used to speak to the NT servers. NT servers will send print jobs to Novell queues using IPX. NetWare will essentially become the network operating system, but not the primary application server operating system.

Wagner says he hopes to leverage what he sees as NetWare's core strength — directory services — to keep its presence felt in the organization and properly manage the growing number of NT systems.

"Whenever we study up on Windows NT, we find we like the Novell way better," Wagner says.

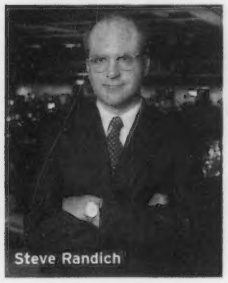
He's strengthening Novell's role by installing NetWare Directory Services for NT to manage the entire network from a central NetWare server. And if Novell and Oracle Corp. develop a SQL server for NetWare, Wagner plans to move database operations in that direction.

CHICAGO STOCK EXCHANGE

Chicago
Steve Randich, CIO
Environment: 40 NT servers, one Unix server, multiple Digital/Compaq VAX/VMS servers

When your new server operating system affects how you move millions of trades per day, you get to know the benefits and flaws of each product — even if your decision runs contrary to conventional wisdom.

So it was with the utmost comfort that the Chicago Stock Exchange transitioned its core VAX/VMS trading system, along with most of its overall computer operations, to NT — even though that type of workload has historically been carried by proprietary mid-range or Unix systems.


Steve Randich

"We have been a VAX/VMS shop," says Randich, CIO at the Exchange. "And Windows NT's roots are the same as VAX/VMS, so from that standpoint we were comfortable moving to Windows NT" for both networking operations and application-specific operations." (Former Digital engineers hired by Microsoft played a major part in creating NT). For example, the subsystem calls in both operating systems that have the same names.

That means NT servers now handle all typical corporate computer operations, such as file-and-print services and E-mail, for the Chicago Stock Exchange's 200 employees and 150 traders.

NT also has been phased in to handle most of the critical trading computer operations at the Exchange, though for the time being it shares duties with some core VAX/VMS systems.

Randich says he believes that both NT and NetWare are highly qualified to act as basic network operating systems for an organization, but the harder choice is where to host and run your critical server applications.

For Randich, a smooth transition was the key. The Chicago Stock Exchange lists more than 4,000 issues, including those from the New York Stock Exchange and Nasdaq Stock Market Inc.

That means the computer system handles more issues than any other exchange in the U.S., putting more pressure on the speed and availability of the system every day.

For example, the Exchange sees up to 500 data messages per second, with some prices changing up to three times each second.

Although for some shops that means immediately turning to a high-end Unix system, Randich says he sees it differently.

He looked at, and began to install, HP-UX servers to handle the load but found that the Unix system didn't coexist well with the myriad VAX/VMS applications still running things. "The proprietary nature of HP-UX Unix didn't mesh well to replace our VAX/VMS systems piece by piece," Randich says.

But with NT, the phasing has been much easier for Randich's 80 IT staffers. Right now, VAX/VMS servers still handle some trading duties on their own. But within two or three months, NT will be running the whole show; it handles most of the actual trading now.

Additionally, issues such as availability and scalability haven't been a problem for the Exchange's NT servers. Randich again credits the VAX/VMS background of NT for that success.

"People who take shots at Windows NT voice concerns about uptime," Randich says. "Well, there are ways to do hardware and software clustering as a means to get 100% uptime with Windows NT" and get a better deal than with Unix as well.

The Exchange was able to create NT clusters without Microsoft's new Cluster Server (formerly called Wolfpack). Instead, Randich has relied on third-party software vendors and his group's application development efforts to deliver high availability. For example, they design applications that recognize when there's a failure and try to restart themselves.

Still, Unix plays a part in the Chicago Stock Exchange's operations.

An Oracle database that handles high-end functions runs on a Digital Alpha server. But when Oracle makes a version of the database application that Randich is comfortable with, he says he plans to migrate the application to Windows NT.

SPINNER NETWORKS INC. (SPINNER.COM)

Burlingame, Calif.
David Bill, CIO
Environment: 12 Sun Solaris servers, one Networks Appliance (Unix) server, one NT server

At Spinner.com, a Web-based company, if the server operating system doesn't work, neither will its business.

The Burlingame, Calif., firm remade its site this past summer and, in the process, it moved from a mix of small Solaris Unix servers to a large group of powerful Sun Microsystems Inc. Solaris servers to ensure greater reliability and scalability.

David Bill

"We need something that can drive a lot of traffic," says Bill, Spinner Networks' CIO. "Additionally, with Solaris, in the past two to three years, the stability has been very, very good."

Spinner's 12 Solaris servers power the site's offering: real-time streaming of digital music. With approximately 2.5 million listeners and 1 million songs in server storage, the system has to stay up at all costs. For instance, when one looks at the number of data packets needed to move digitized audio files across the Internet, Spinner.com is about as big as one of the larger Internet search engines, Bill says.

And because Spinner's IT group has experience in Unix and trusts its scalability and reliability, Bill said he was more comfortable betting the business on a Unix server environment.

"In terms of price/performance, I think Windows NT is reasonably close enough to Unix, but I don't feel Windows NT is ready on the scalability and reliability side," he says. "If all things were equal between Unix and another platform, I would still go with Unix."

Still, "We would consider NT if they improved stability and scalability," Bill says. "We are constantly evaluating new technologies to see if they are appropriate for our environment, and new releases of NT are certainly included in that."

None of the Solaris machines has crashed or suffered any downtime — except for routine maintenance — since going online this summer. And because they run music in RealAudio format, which was created with Unix, the integration works very well, he says.

But cutting-edge Internet businesses still have to pay the bills, provide employee benefits and communicate via basic E-mail. To handle those general business needs, Bill chose NT for file-and-print services, hosting personal productivity applications and internal E-mail.

"For any application, we try to buy the best operating system," Bill says. "And with Windows NT, for these needs, you get better features, especially when you compare it with Unix E-mail packages. These include lower cost and ease of use."

Still, like Arcadia's Grove, Bill made sure that the NT server required little administration effort from his Unix-oriented staff. He says he has no plans to bring NT into the production side of the company's business. □

Ouellette is a freelance writer in Scarborough, Maine.

"There are ways to get 100% uptime with Windows NT . . ."

STEVE RANDICH, CIO AT THE CHICAGO STOCK EXCHANGE

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Review

Windows 2000

directory gains ground on NetWare, Unix

BY GARRETT MICHAEL HAYES

A KEY ELEMENT OF Microsoft Corp.'s Windows 2000 strategy and the server operating wars revolves around Microsoft's Active Directory and its counterparts in the Unix and Novell Inc. NetWare worlds.

Computerworld and Client/Server Labs Inc. examined a beta version of Active Directory alongside NetWare Directory Services 7.09 (NDS) and the Unix-based Sun Directory Services 3.1 (SDS) from Sun Microsystems Inc., looking at the products from the viewpoint of a systems administrator.

The most apparent strength of Active Directory is in its administrative interface.

Here's how the three stacked up, based on our examination:

- Microsoft is preparing a strongly positioned product with packaging and presentation that may overshadow Novell's pioneering developments in the field. Without adding fundamentally new concepts, Microsoft has mounted a clean user and administrative interface to a directory.
- Novell has developed and deployed all the right pieces, while still not quite crossing the ease-of-use finish line.
- Sun, which lacks the easy accessibility of either of its competitors, may find it difficult to drive its offering into new markets.

DIRECTORY VALUE

THE GREATEST VALUE THAT ANY DIRECTORY SERVICES product can bring to an organization is consolidation. As networks grow more complex, as the number of users increases, and as applications become more integrated into daily business operations, the need to access and control information about the who, what and where of the network grows. In most existing networks, several applications are used to manage this information, with each maintaining its own "directory" of relevant information.

This fragmentation of information is costly. At the simplest level, the human factors costs may be readily calculated. You factor the payroll costs for an administrator against the average number of changes in a year, multiplied by the average time needed to make a change.

Add the costs of both initial and ongoing training for each product, and you then have a good idea of the direct annual costs for a system of multiple directories.

What isn't easy to quantify is the business cost of bad information. What's the cost to the business when users can't find a corrected copy of that critical E-mail address or connect to an alternate printer to prepare that vital presentation?

The biggest long-term value of directory services to business is likely to be in this more nebulous area, rather than in direct, short-term savings.

ACTIVE DIRECTORY

MICROSOFT HAS DONE A CREATIVE JOB OF PACKAGING the administrative interface with its directory service engine. It also has made a good start with the process of integrating user applications. It hasn't, though, added truly new concepts to what makes up a directory service. But Active Directory is a competent answer to the question of how to provide a directory service. Whether it's right for you depends on timing. If you need it before next year's planned shipping of Windows 2000, look to the solutions from Novell or Sun.

Also, many of Active Directory's immediate end-user benefits depend heavily on aspects of the Windows 2000 client. Unless Microsoft releases updates or extensions to Windows NT 4.0 and Windows 98 to provide additional directory access services, users will be forced to move to Windows 2000 to take real advantage of Active Directory.

The most apparent strength of Active Directory is in its administrative interface. Active Directory management is handled through the Microsoft Management Console (MMC), introduced with later versions of NT 4.0. A software module called a "snap-in" adds the Active Directory management tools to MMC. The administrator may add or remove snap-ins for everything from Domain Name Services (DNS) to Web Services, resulting in a tailored but consistent view of all the various aspects of managing a Windows 2000 environment. This familiar tree-structured interface also goes a long way toward making it easier to form administrative tasks.

General access to directory information is through the widely accepted Lightweight Directory Access Protocol (LDAP). That means information can be retrieved from the directory through any standard LDAP client such as the search function in Microsoft Exchange and other E-mail packages. LDAP also enables developers to use standard query techniques to retrieve information from a consolidated directory. Microsoft has begun this process of tying end-user applications into the directory services concept with simple but important steps such as allowing the user to search for special-purpose printers as part of the printing process.

With Active Directory, Microsoft is eliminating the NT concepts of Primary and Backup Domain controllers and significantly easing the burdens associated with things such as trust relationships. Active Directory automatically creates appropriate trust relationships between parent and child domains, making it much easier to set up a hierarchy of domains.

Active Directory collects attribute information for each object in the directory, stores that information as part of the object's record and distributes the entire set of attributes to each replica. This approach reduces the amount of time and network traffic needed for a client workstation to get information about remote resources but may do so at the cost of higher rates of network traffic during the maintenance and update process. Administrators will need to carefully consider this in planning the distribution of replicas.

Most users and many administrators today become confused among NT domains, TCP/IP domains and application domains. Though superficially attractive, Microsoft's decision to name Active Directory objects according to DNS standards may add to the confusion.

Despite some limitations, Microsoft Active Directory looks like a

Windows 2000, page 84

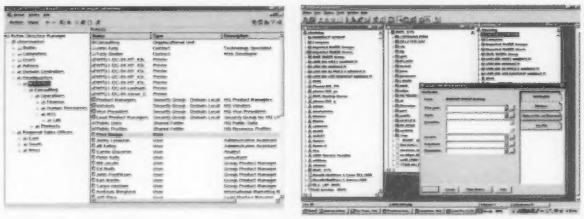
Windows 2000

CONTINUED FROM PAGE 83

positive step toward making system information widely available and useful. Adoption by application developers will be key. Microsoft may well be able to drive that sort of adoption into the marketplace, simply by virtue of its mass if not brilliance.

NETWARE DIRECTORY SERVICES

FOR FOUR TO FIVE YEARS, NOVELL has been trumpeting the value of directory services in managing the corporate network. Introduced with the NetWare 4.x product line, NDS was a significant advancement in the concept and implementation of a directory service engine, at a time when few people understood the real value of directory services. Key features promised by Microsoft are already in NDS. Today, with NDS 7.09, under NetWare 5.0, Novell is in the curious position of having been too good, too early.



The traditional Windows tree structure remains a key device in Microsoft Active Directory and Novell's NetWare Directory Services

The most immediately obvious way in which NDS is superior to Active Directory is simply that it's here, commercially available, with a track record of several years of operation. Unfortunately, that may also be the greatest hurdle Novell faces in marketing the product. Most of the changes and improvements Novell has made in this latest version of NDS are evolutionary rather than revolutionary. Some in the market may translate this into an unfair characterization of NDS as "nothing new." NDS as it stands today already has such features as LDAP access, delegation of authority and tools for customizing the directory by extending the underlying schema.

The primary differences between NDS and Active Directory are administrative tools at the surface and propagation methodology underneath. Information about users, servers, groups, roles and similar objects in the NDS structure is managed using Novell's familiar NWAdmin utility. The interface is quite usable, although Novell hasn't done as good a job of presenting the structural relationships. You handle the directory itself, including designing partitions and setting rules for propagation, through a separate NDS management tool.

NDS also uses a more frugal form of directory propagation than Active Directory. The Novell system is based on the idea of inheriting attributes from higher levels and calculating effective attributes when information is requested. Deciding attributes becomes a bit more intuitive, but the network traffic pattern is different. Traffic generated by additions and changes will be lighter because only high-level changes need to be replicated. If an application or user requests detailed information about a remote resource, that request will generate additional network traffic. As with Active Directory, the importance of that will depend on how distributed an organization is and how often remote resources are used.

LDAP support is provided first by what Novell calls a "catalog," in which a limited set of data from the full directory is indexed and made available for rapid access. The administrator decides whether LDAP queries that aren't resolved by the catalog will pass on to be processed from the full directory. Novell made this distinction when LDAP was primarily seen as a tool for remote access to things such as E-mail addresses, but it still serves to speed remote access and limit visibility.

From a client perspective, seeing the benefit of NDS resources is less problematic than with Active Directory. Because Novell provides separate client applications which reside *on* rather than *in* the client platform operating systems, upgrading to the latest versions is considerably easier. You need only distribute the latest client, rather than upgrade the entire operating system.

The biggest problem for NDS is simply that there are few if any "killer" applications already out there which make use of *any* directory services concept. Existing applications that do, such as Novell's own GroupWise, have yet to drive demand. In fact, the tie to directory services has in the past been seen, unfairly, as a negative factor in adoption of such applications. For current adopters, the key question will be: "Do I have critical applications with a *need* for directory services that can be satisfied via LDAP?" If the answer to that question is yes, then NDS provides a very usable answer today.

SUN DIRECTORY SERVICES

SDS BUILDS ON SUN'S EARLIER Network Information Server (NIS). SDS, which was developed over the past three years, was initially deployed as part of the Sun Internet Mail Server.

Internet service providers and academic institutions with large numbers of users viewed as "customers" who come and go are likely to be pleased by the separation of the directory from the operating system. But corporate administrators with less transient user populations may find the disconnect a problem. Somewhat surprisingly, though, SDS doesn't provide support for Sun's later development in directory services, NIS+. Although SDS can take the place of an NIS server with no changes to existing NIS clients, that isn't the case for clients using NIS+. Users wishing to change will need to abandon NIS+ clients, unless Sun announces new plans.

From an administrative standpoint, Sun provides a Java-based management tool, called the Solaris Management Console (SMC). Similar in concept to Microsoft's MMC, it provides management access to the various components of Solaris 7. The focus of the SDS portion of the tool, however, is directed toward managing the directory structure rather than managing content. I found the interface somewhat confusing, especially when trying to understand and work with elements such as setting access rights. You use a separate Java-based utility, called Deja, to enter information into the directory. This utility wasn't tied in to the SMC application, which made adding directory content a bit more difficult.

Users of the Sun Internet Mail Server are already familiar with the core elements of SDS. E-mail users added to this product are automatically represented in the directory. I was surprised to discover, though, that Sun hasn't connected the process of managing operating system users to the process of managing the directory. Users defined for the Solaris system itself aren't reflected in the directory, even as an option, but must be added via an "import" process. Being able to separate the two will be a boon for Internet providers, but a problem for corporate users who need to keep separate directory structures in sync.

Sun also hasn't yet tied its own directory structure in to other basic system utilities, as Microsoft and Novell have done. Although applications such as SIMS do take advantage, there are no user-oriented "goodies" to help move the directory concept into the mind-set of the average user. In replication, SDS lets the administrator define whether full or partial copies of the directory structure are propagated to other servers, although the structure appears less dynamic than either Active Directory or NDS.

Overall, the lack of integration is the most telling factor for Sun's Directory Services. This will be a plus in the services marketplace, where the ability to separate users from customers is crucial. In the more homogenous corporate world, the fact that the separation is effectively enforced by the tools provided will probably continue to limit acceptance. □

Hayes is a systems controls manager at Client/Server Labs Inc. (www.cslinc.com) in Atlanta, a primary test lab partner for Computerworld.

How we did it

To get a feel for how the products operated, we ran a commercial copy of NetWare 5.0 with NDS Version 7.09 on a 400-MHz Pentium II IBM NetFinity 5500 server with 128M bytes of memory. Sun Directory Services 3.1 was run on a Sun Ultra 60 workstation running the forthcoming Solaris 7.0 operating system. The Beta 2 version of Windows 2000/NT 5.0 was run on a 266-MHz Pentium II Dell 2200 server, also with 128M bytes of memory. Our original plan to run NT 5.0 on an identical IBM NetFinity was changed because the Beta 2 version of NT 5.0 didn't yet have support for the RAID subsystem in the new NetFinity machines. But that support is scheduled to be in the next beta release from Microsoft.

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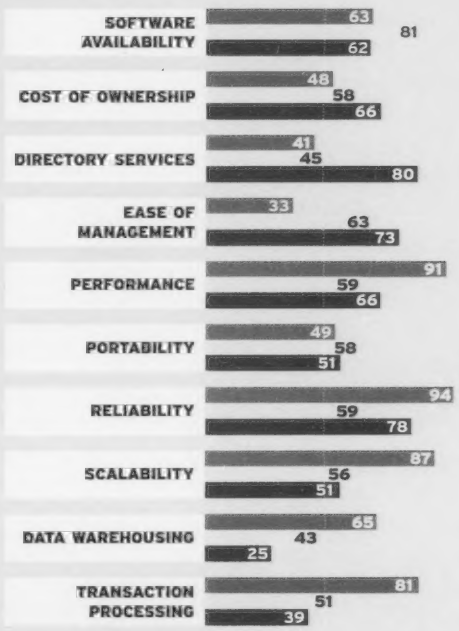
Unix Holds Steady

STRENGTHS IN PERFORMANCE AND RELIABILITY POSITION UNIX FOR THE FUTURE, BUT NT IS COMING ON FAST

TOP STRENGTHS AND WEAKNESSES

UNIX
NT SERVER
NETWARE

IT managers were asked to rate their satisfaction with the operating systems they are running using a five-point scale where "A" is very good and "E" is very poor. Here are the percentages of respondents who said each platform did well (good, very good) in various areas.



Base: Computerworld Information Management Group Telephone survey of 201 IT managers in large companies

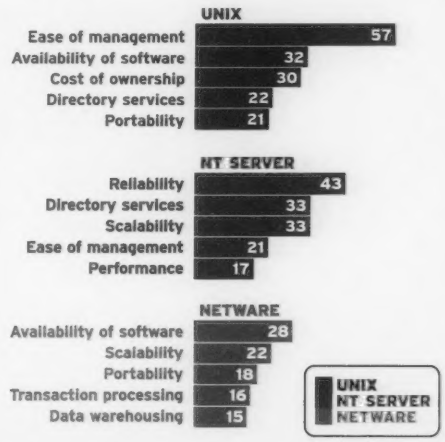
NT GAINS AT NETWARE'S EXPENSE

Average percentage of enterprise-class applications supported by each operating system in the responding organizations, today and two years from now. (Base of 201 respondents)

Applications	Today	Two years from now	Percent of change
UNIX (161 responses)	30%	31%	+3.6%
NT SERVER (180 responses)	31.6%	44.1%	+39.3%
NETWARE (141 responses)	27.7%	17.6%	-36.6%
Other	10.9%	7.4%	-32.4%

WISH LIST

Respondents were asked to name the areas in which their operating systems will need to show improvement in 1999. (Percentage of users citing each area; three answers allowed)



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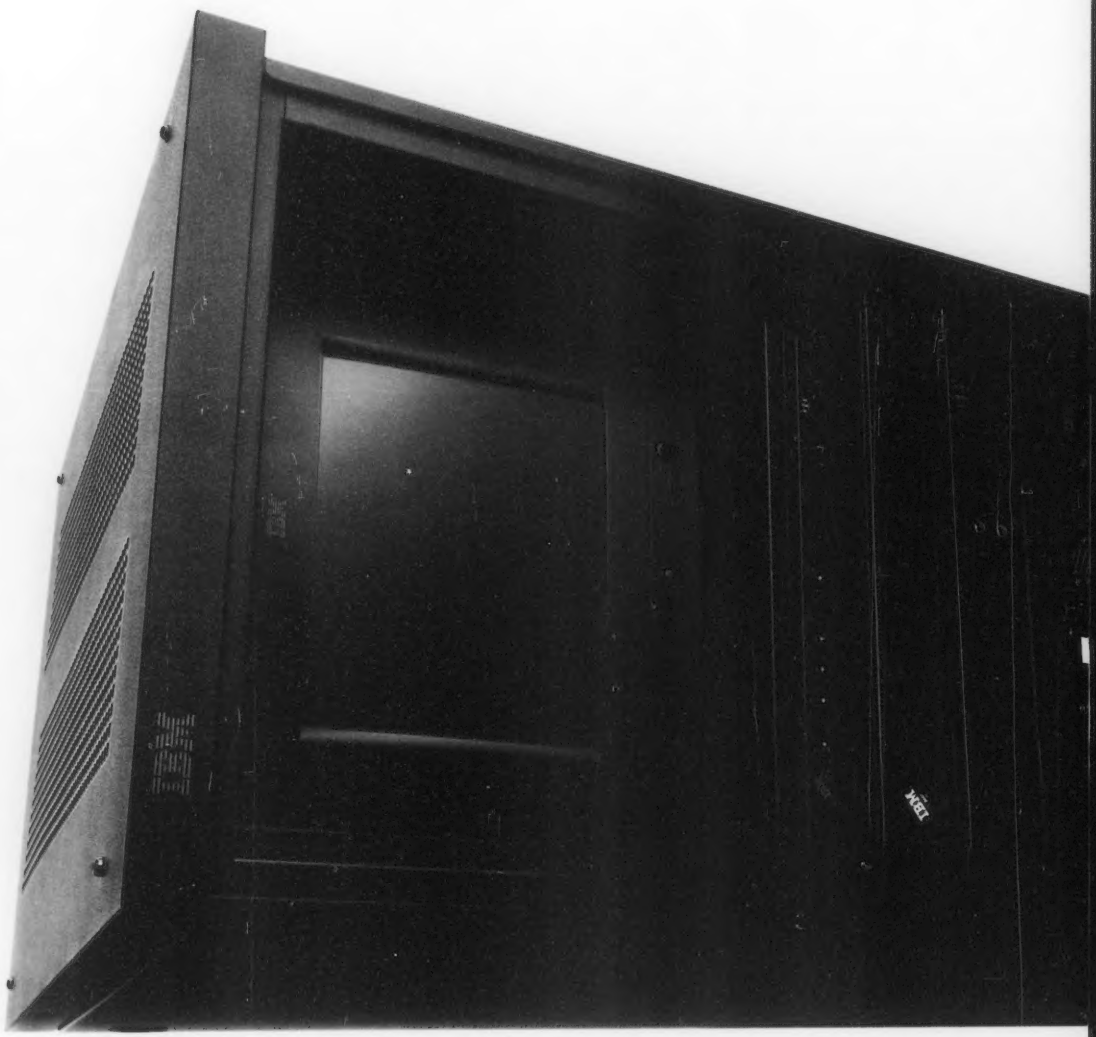

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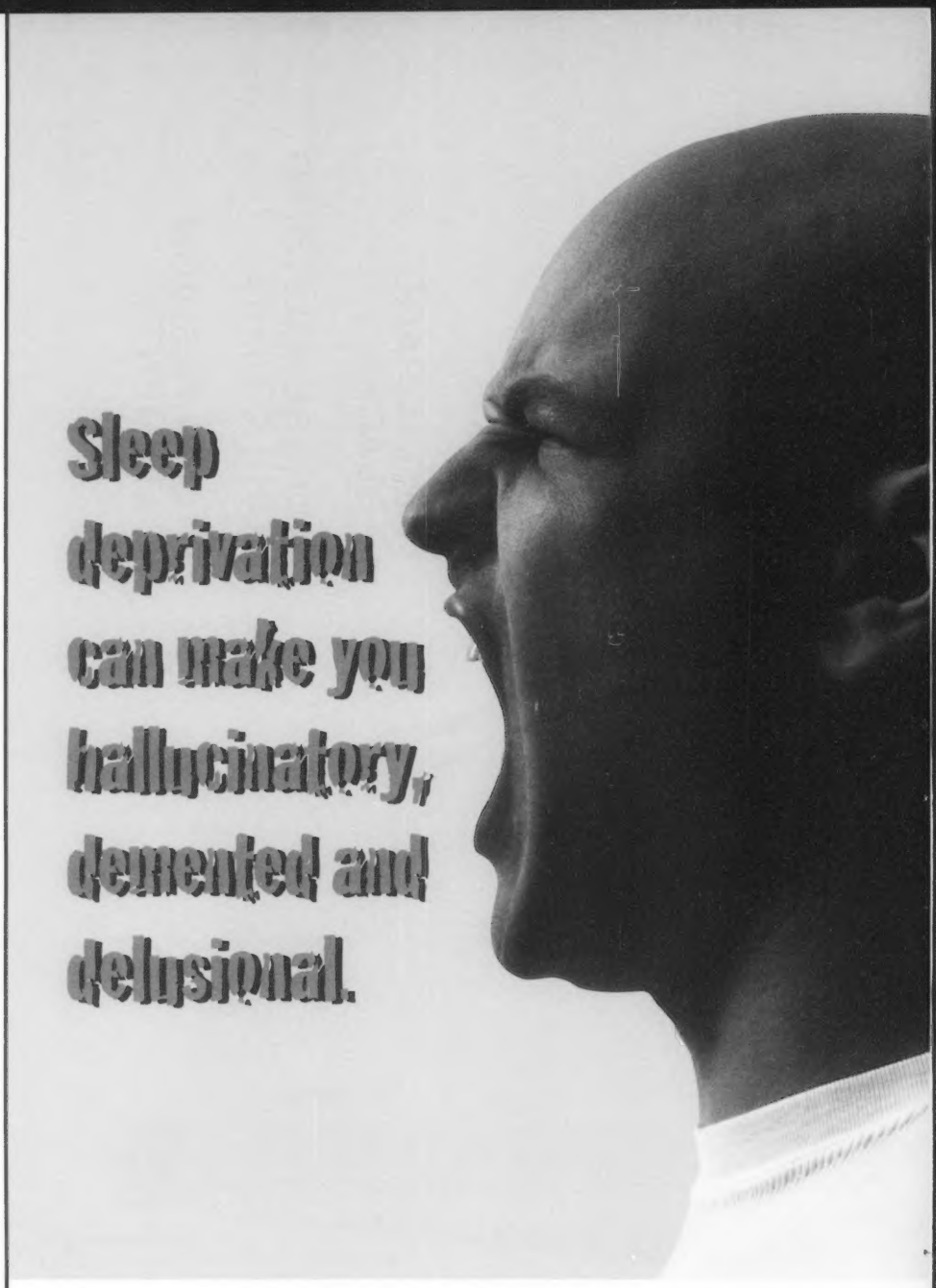

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In Depth

BUSTED!

She thought she could pull a fast one on a Connecticut agency's ID system. But the fingerprint reader caught her in the act. Chalk up another believer in biometrics. BY DEBORAH RADCLIFF

I was a welfare fraud. I tried to cheat the system. But the system fingered me — and I've got the rap sheet to prove it.

It all happened one chilly November morning when I entered a narrow room at the Hartford, Conn., welfare offices, part of the Connecticut Department of Social Services (DSS).

In front of me was Christine Nance, who had lost her welfare identification card. She gave the clerk her name and Social Security number, then placed her index finger on a $2,200 Identix Inc. fingerprint capture device. In a millisecond, Nance's face appeared on the clerk's screen. It looked painless. Her only complaint? "I was fat when they took that picture," she says.

JULIE BIDWELL

But when I placed my finger on the reader and smiled for the Hitachi Ltd. RGB camera attached to the back of a monitor, my benefits were denied. It seems I'd been there before, under a different name with another Social Security number and date of birth.

Busted.

Fortunately, this was just a test of a $5.2 million, biometrics-based fraud prevention application developed by the Connecticut DSS.

State welfare agencies, departments of motor vehicles and military groups are breaking biometrics ground for future business applications, according to Phillip Greene, a senior technologist at Fairfax, Va.-based consulting firm American Management Systems Inc. (AMS). In addition to Connecticut, Los Angeles County and New York City's welfare programs also have large biometrics projects in place.

Corporate America could learn from these guys — especially as more companies realize the cost of lost or stolen passwords.

REPLACING PASSWORDS

"We're also trying to promote biometrics within our own organization, which would cut 50% of our help desk costs because there will be no more lost passwords," says David Mintie, project director at the Connecticut DSS.

In addition to replacing frequently lost welfare ID cards, biometrics already has replaced passwords for the 70 DSS system operators who access the agency's print database and demographics mainframe.

Implemented by Cambridge, Mass.-based Polaroid Corp.'s digital imaging unit and biometrics software vendor SafeLink Inc. in Tampa, Fla., the application supports 18 offices statewide, which access the prints over a TCP/IP network. More than 150,000 images are stored in two Sybase Inc. databases at the DSS central operations center in Hartford.

Since the program's inception in January 1996, the biometrics system has tagged 35 welfare frauds, 12 of which resulted in successful forgery and larceny convictions. "We caught one last week who'd collected $10,000 under two identities," Mintie says.

If those numbers seem low, maybe the ounce-of-prevention principle is at work: DSS estimates the fingerprint verification system has scared off about 11,000 recipients who previously were double-dipping on benefits. That's saved the agency about $9.4 million, according to Robert O'Connor, director of MIS, who calls the program the strongest fraud deterrent in the welfare program's history.

Starting in June 1995, Mintie's team had just six months to take the project live. At the time, the technology was immature at best. Moreover, privacy advocates charged that using biometrics in a welfare program violated the dignity of a particularly vulnerable segment of the population.

The team evaluated a dozen tools — everything from palm mapping to retinal scanning to facial imaging — before settling on SafeLink. The biggest problem,

Busted! page 92

BUSTED!

CONTINUED FROM PAGE 91

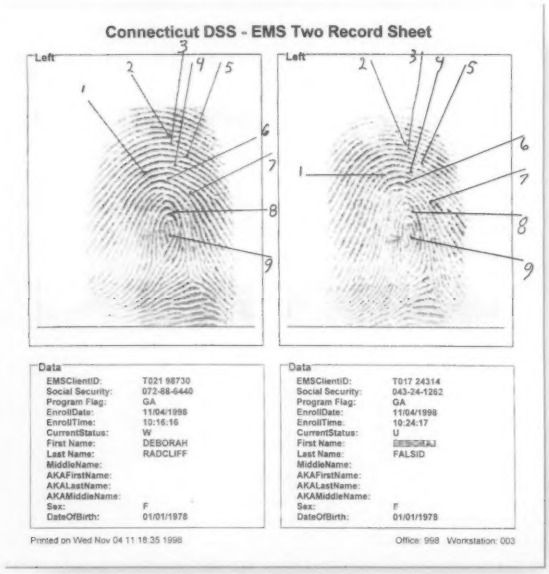
Mintie says, was separating vendor hype from reality. "Many of the tools failed during demonstrations," he says. Because image transfers put higher demands on the network, AMS's Greene says he believes most biometrics adoptions will occur during upgrades. DSS was no exception. During the biometrics rollout, technicians also were building the infrastructure to migrate off dumb terminals to PCs. "It was perfect timing because it enabled us to do some of our agency requirements and get this network up," says DSS systems analyst Terry Hayes.

Database development and maintenance were outsourced to SafeLink. However, the biometrics images had to link to the IBM mainframe (installed in 1989) to match clients' demographics: the Social Security numbers, addresses and birth dates stored within.

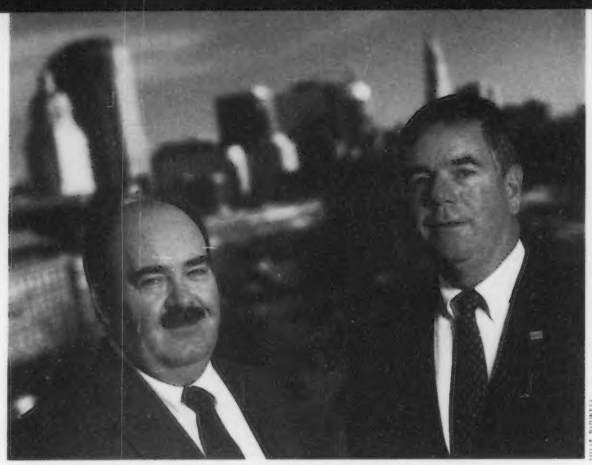
"If our mainframe system didn't talk to our visual imaging piece, we could still unknowingly issue benefits to people who'd already collected," O'Connor says.

Joining the mainframe to the biometrics system was accomplished through some elegantly written extraction commands. "To my knowledge, this is the first application that links biometrics to the mainframe," says SafeLink's Mike Evans, the project manager assigned to DSS.

Thus began the initial mass enrollment of some 84,000 early participants. In order to keep daily operations running, Mintie handed the job to Polaroid, which has an extensive background in foreign national ID and domestic driver's license imaging programs. It took Polaroid (and 70 temporary staffers working out of temporary offices) six months to capture and input the images and issue ID cards. O'Connor says that, except for writing the mainframe-to-database middleware, DSS technicians have had little upset to their daily jobs as a result of the system. SafeLink maintains it, and DSS outsourced help desk support — of which little is needed — to Polaroid.



As a demonstration, the author registered for Connecticut welfare benefits under her real name and also as "Debora J. Falsid." When "Falsid" tried to get a check, the agency's biometrics system showed that someone with her fingerprints (lines point to similarities) had already been in the system.



Connecticut DSS project director David Mintie (left) and IT chief Robert O'Connor say the ID system has saved almost $10 million

GETTING IN ON THE ACT

Next came the most difficult part of Mintie's task: cross-state matching to catch recipients double-dipping in nearby states.

Passing print images to other states has been a nightmare in vendor exploitation that still gets Mintie fired up. "I had vendors come in and tell me they wanted $6 [to match] each record," he says. "The vendors have you over a barrel. It's the proprietary way they store, extract and convert the gray-scale photograph of each finger. It took me a year to get [two] vendors to agree on a standardized data extraction format."

According to research conducted by Mintie's team, 11 states had adopted biometrics in their social services programs as of March. Three of those states — Connecticut, New York and New Jersey — are now cross-matching at 25 cents per record thanks to fingerprint imaging vendor Sagem-Morpho Inc. in Tacoma, Wash., which developed an interoperable standard at Mintie's insistence.

ORWELLIAN NIGHTMARE?

But if states do coordinate their data, couldn't that play right into the hands of Big Brother?

According to Mintie, confidentiality is guaranteed by a state mandate against sharing fingerprints with police or corrections organizations. Moreover, a DSS poll of 300 welfare recipients showed that 85% had no objection to the process. In fact, Mintie says, "recipients said this proves that they're not cheats."

IMPERFECTIONS

Multiple cross-checks and reviews ensure that false charges aren't filed. Indeed, since the program's inception, about 1,100 "matches" turned out to be administrative errors (such as clerks inadvertently entering the same recipients into the system more than once) or very close matches to other prints in the system.

Readings are sometimes distorted by sweaty fingers, bad lighting, misaligned readers or other environmental factors.

In addition, 2% of recipients don't have clear-enough fingerprints to make an accurate image, according to Mintie. And it isn't just welfare recipients who have that problem: Of the 70 clerks who access the system, four don't have clear-enough prints to log on.

DSS handles part of the problem by positively identifying recipients against their photos, which also are stored in the database. The clerks with bad fingerprints must log on through a cumbersome token response application that O'Connor wants to replace as quickly as possible with another biometric tool: facial mapping.

Soon, operators will have a small camera mounted on their terminal, which will record their every move and feed it into facial recognition software. When the operator walks away from his machine, it logs off.

But when Mintie let me test the system (in a lab, no less), it left much to be desired: sluggish logons, time-outs and a weird command asking for more identifiable information. Nevertheless, O'Connor says that once DSS works out these problems, the facial-recognition system will be used not just for operators but as a secondary ID system for recipients.

AMS's Greene says the Connecticut DSS is on the right track by using multiple biometrics technologies. "You'll start hearing more about layering biometrics for more precise matching," he predicts. "Face and voice should be layered together because people are comfortable being authenticated that way." □

Radcliff is a freelance writer in northern California. Her Internet address is derad@aol.com.

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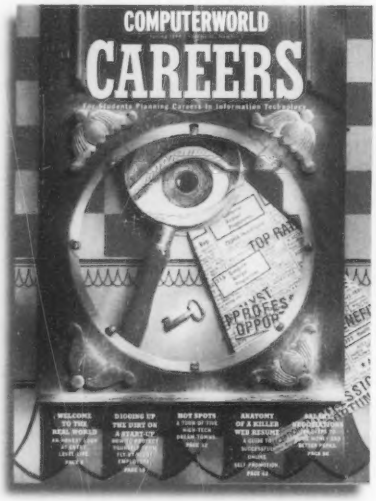

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IT Careers

ROADS TO THE TOP

BARRY X. LYNN, WELLS FARGO BANK

MARGARET "LYN" McDERMID, VIRGINIA POWER

VIVIAN STEPHENSON, DAYTON HUDSON

What career advice would three prominent CIOs give to would-be IT executives? Pay as much attention to personalities and corporate culture as you do to technology.
Story begins on page 96

BY ROBERT L. SCHEIER

TOP ROADS TO THE

CONTINUED FROM PAGE 95

One works in financial services, one for a utility and one in retailing. They all have risen to leadership positions in their companies' information technology organizations. What has allowed them to go further faster than their peers isn't technical skill. It's an eye for people, for vision, for collaboration and for business.

NAME: Vivian Stephenson
AGE: 62
TITLE: Senior vice president and CIO
COMPANY: Dayton Hudson Corp., Minneapolis
WHEN NAMED TO POST: April 1995
MOST RECENT ACCOMPLISHMENT: Spearheading drive to implement common systems across Dayton Hudson's operating divisions, which include Target, Mervyn's and department stores such as Macy's.

CW: Give us a quick overview of the jobs you held before becoming CIO.
STEPHENSON: I started as a programmer/analyst and then did some business systems analysis and then went into database administration. From there, I did some work in systems software and telecommunications and computer operations. I really covered the whole set of information technology functions fairly early on in my career.

CW: Do you feel held back because of your lack of experience on the business side?
STEPHENSON: It hasn't held me back, but if I had this to do all over again, I'd want to have some operational experience. That [helps you understand] the business you're in, what the competitive opportunities are and where you're going next month and six months from now and five years from now.

CW: What jobs were most critical to your advancement?
STEPHENSON: The most significant, in terms of learning, was in the early '80s, when I was given responsibility for converting systems from an older technology to state-of-the-art. A couple of years after that, I was responsible for running computer operations, a sophisticated network and some data centers. That rounded out the knowledge I had — by doing the jobs individually and by bringing my management skills and leadership skills to get much bigger jobs done.

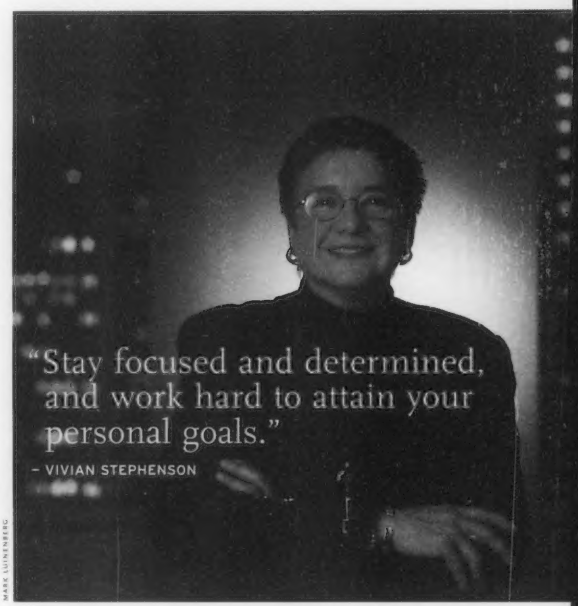
CW: How did you build your leadership and management skills?
STEPHENSON: It did come fairly naturally to me, but I also always learned a lot from observing others that I considered good leaders, whether or not they were in the IT organization.

CW: How about making personnel decisions?
STEPHENSON: It's been a learned skill. I'm still learning. The market has changed so dramatically because you're dealing with different sets of skills, family and work-life considerations. You need to always be a fair employer, with equal opportunities for everyone. We're always looking for ways of making our department the preferred workplace.

CW: Has learning whom to hire been difficult?
STEPHENSON: We're fortunate at Dayton Hudson to have a very strong and informed [human resources] department for IS. We have our own dedicated HR team. We know the technical skills we're after, but equally important for us is the cultural fit. That probably weighs as much, from our point of view, as technical requirements.

CW: What kind of person fits best in your culture?
STEPHENSON: [Someone] dedicated to enabling solutions with technology, but not driving technology on top of the business needs. I would look for people that are open and candid and communicative and that have the potential to move on and replace me one day — people that are not afraid to undertake a very significant challenge. You know pretty quickly whether they're gravitating to wanting to talk about the nuts and bolts of technology, or if they bring an experience that has more of a business character to it.

CW: What advice would you give to aspiring CIOs?
STEPHENSON: Stay focused and determined, and work hard to attain your personal goals. Focus on keeping up with the business and having a very strong team that can take care of the ever-evolving technical innovations.

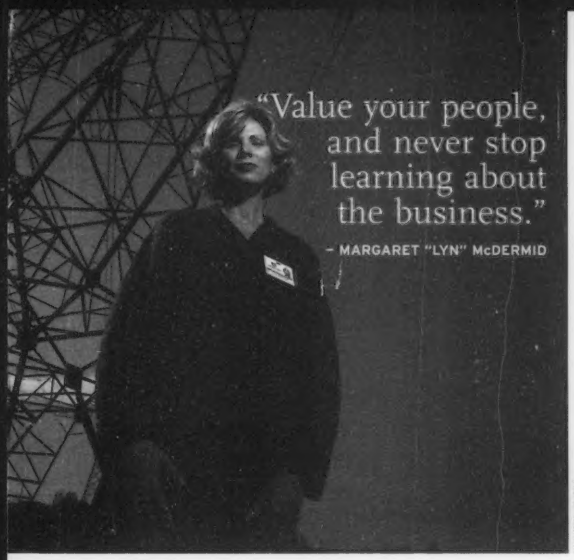


MARK LUNSFORD

NAME: Barry X. Lynn
AGE: 47
TITLE: Executive vice president and CIO
COMPANY: Wells Fargo Bank, San Francisco
WHEN NAMED TO POST: 1993
MOST RECENT ACCOMPLISHMENT: Taking the risk to build a companywide, Web-ready financial services network before applications were in place to take advantage of the network.

CW: Tell us about your career path.
LYNN: I worked at a couple of companies in New York, then wound up at Chemical Bank. I was in my early to mid-20s [and] had expressed such an interest in the business side [that] I was offered a position outside of IT in international operations. By the time I left Chemical Bank, I was pretty well-established as a manager of both the IT side and the [financial] operations side.

CW: Was that crucial?
LYNN: That [is] a much surer formula for success than just moving straight up the ranks into the CIO position. The people who stayed interested in both [IT and the business] stayed ahead. When I first started at Wells Fargo [in 1983], lots of departments had both business and information technology responsibilities. [For example], I was the



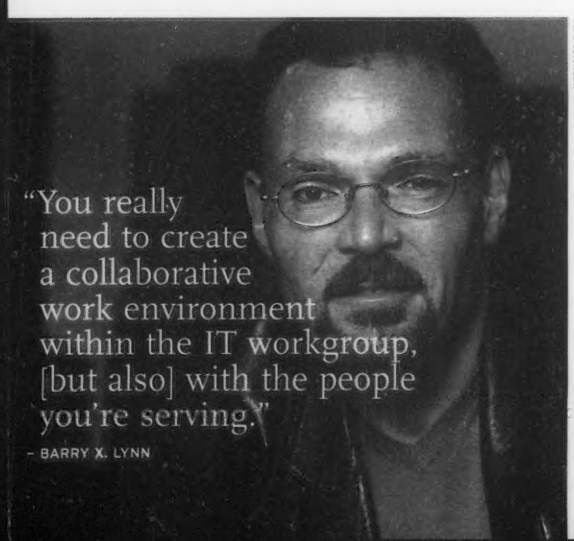
WALTER GALICIAN

founder and first president of Wells Fargo Securities. I think I was the first licensed stockbroker at Wells Fargo, [but] I also ran the technology to support our brokerage firm.

CW: How did you beat out other candidates for the CIO job?
LYNN: When I started at Wells Fargo, IT was very decentralized. When [the bank] decided to centralize, there weren't a lot of candidates. They wanted somebody who was already part of senior management [and] who had a fairly extensive information technology background. That got the candidates down to a pretty short list.

CW: What are the most crucial skills you've developed over the years?
LYNN: You really need to create a collaborative work environment within the IT workgroup, [but also] with the people you're serving. A lot of IT managers [try] to protect their turf [in] the belief that what we do is so complex and so fragile [that] they really can't let the wrong people get involved. [If you believe that], either you're overestimating how fragile it is, or you should fix it.

CW: What have you learned about personnel decisions?
LYNN: I used to believe that probably 80% or 90% of that decision was based on [the employee's] skills and experience. [But] if you put someone in an assignment who has the right personality traits — meaning ones which will work best in your culture — but may be lacking a few skills or lacking some experience, those people will succeed 100-fold vs. the people who have the right skills but the wrong, or inappropriate, personality traits.



ALAN LEVENSON

CW: What are you most proud of?
LYNN: Five years ago, when I first became the CIO of Wells Fargo, we had a vision of going to a networked computing environment. We took a chance and built this network. As a result, we're the No. 1 bank on the Internet, [with] the most-used ATM network, the most-used telephone banking network.

CW: What advice do you have for aspiring CIOs?
LYNN: As much as I'm a proponent of being more involved with the business, maybe I still didn't do enough. Whenever [a project] was not a success, or not as big a success as it possibly could have been, it rarely had to do with a technology issue. More often, it had to do with either not a close enough understanding [of] the business problem or not valuing the right skills in people you were giving assignments to.

Maybe if I'd done more of that, and done it earlier, I'd be a CEO instead of CIO.

NAME: Margaret "Lyn" McDermid
TITLE: CIO and vice president of IT
COMPANY: Virginia Power, Richmond
AGE: 49
WHEN NAMED TO POST: Sept. 15, 1998
MOST RECENT ACCOMPLISHMENTS: Helping to convert Virginia Power's IT operation from an unresponsive, mainframe-centric department to a more business-focused, client/server operation. Helping to complete a successful SAP implementation in one year.

CW: What's your main goal in your new position?
McDERMID: To make sure that the people who work with and for me have every opportunity to do what they're being asked to do, by removing roadblocks and doing the things that I can do, to provide them with what [they] need to do their job. Because they're the people who get it done.

CW: Can you give us an example?
McDERMID: In a year, we put in a major SAP implementation. We got the absolute best people in the company to participate. We also involved management, from the top down, to support those people, and that took a lot of facilitation and a lot of negotiation.

CW: Would you call that being good at corporate politics?
McDERMID: [Laughs.] No, but I think it's probably true. I don't like to think of myself as a politician. I think of myself more as a facilitator.

CW: What personnel and hiring skills have helped you reach your current position?
McDERMID: I look for people's ability to work with other people. When I'm considering hiring people, it's always in a group setting. I see how they relate to other people and how other people relate to them. This is a very complicated business that we're in, and 99% of it is people — it's not bits and bytes.

The only way to get [projects done effectively] is to trust the people that know how to do it to get it done. In the engineering world and the accounting world, you can dictate rules and regulations. In the IT world, because there's so much creativity required, you have to foster that and allow that to grow rather than control it.

CW: What would you do differently, if you could?
McDERMID: Over the last five years or so, we've been through several iterations of downsizing. You can [downsize by cutting] 15 people here, this project there. [But] if five years ago, I knew what we would be facing now, I would have been more decisive [and] not prolong painful decisions.

CW: What advice do you have for aspiring CIOs?
McDERMID: Value your people, and never stop learning about the business. □

Scheier is Computerworld*'s senior editor, business processes.*

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SKILLS SCOPE

Development tools

Early developers

By Kim Fulcher Linkins

What will it take to survive the last year of the millennium? In the IT realm, application development is certainly drawing great numbers of people and greater talent. But just what makes these people so valuable? What kind of tools do they use? What kind of training have they had? And how will certain skills affect someone's climb up the career ladder? To find out, we spoke with five early information technology developers now working with the hottest tools at vendor firms and consultancies.

Jon Credit

Vice president of technical consulting, **CLM Concepts,** *Charlotte, N.C.*

Current work: PowerBuilder. Architecture-type projects and building foundations used by other applications.

Challenges: Management at different client sites. "The management thinks that PowerBuilder will help them create applications so much faster that they don't have to do the appropriate analysis and design up front."

Rewards: A "fantastic" user community. "You can get a lot of job satisfaction if you get on the right projects."

Training: Attended introductory and advanced courses for PowerBuilder 2 through Powersoft and third-party-certified instructors.

Career effect: "It's made me feel very comfortable with my career in this industry. There are plenty of employment opportunities out there. [Powersoft] is moving forward in the right direction, and they've helped me come into this new paradigm of distributed computing."

Salary impact: Consultants can earn from $45 to $175 per hour depending on the complexity, how critical the application is or the skill level.

Advice: "Learn object-oriented concepts, then understand how to apply them."

Mark Conde

Vice president of custom solutions, **Tactics Inc.,** *Atlanta*

Current work: Oracle Developer 2000. Builds new systems on base financial tools, including custom order-, time- and expense-entry front ends.

Challenges: "Moderate" learning curve. Within financial workflow software "you end up spending a little more time learning how to build the relationships between complex structures in the screens themselves. [But] where you have a little bit higher learning curve, thus comes the flexibility that you don't have because the other [tools] make you follow a particular constraint or particular interface method all of the time."

Rewards: "You have a very robust tool as far as being able to build something that you need. Any type of application can be built with it." Also, Developer 2000 has a close marriage with the Oracle database. "You are able to manipulate a very large result set of data."

Training: Oracle courses and on-the-job training.

Career effect: After Conde and his company worked with Developer 2000 for a period of time, they placed No. 16 on *Inc.* magazine's list of the 500 fastest-growing companies.

Salary impact: "To use it and be effective, you actually end up learning a great deal more than the tool, and we've seen people make $70,000 to $80,000 [per year]."

Ted Long

President, **Documation Inc.,** *Orlando, Fla.*

Current work: Microsoft Visual Basic. Use it as a front end for SQL server development; most applications are client/server applications, with a few Internet-based applications in the engineering and health care industries.

Challenges: Getting information. "Visual Basic is an evolving product and has lots of capabilities, but getting information on how to utilize those capabilities has always been a challenge."

Rewards: "Visual Basic is rapidly becoming an industry standard in our opinion. Microsoft has put a lot of R&D into the product, so it is constantly getting better."

Training: Authorized technical education centers for Microsoft and on-the-job training.

Career effect: "It's improved our company's ability to sell our services . . . [and] it's probably improved the quality and the level of development we can actually perform in a given a period of time."

Salary impact: "The average Visual Basic programmer goes for $50,000, $60,000 or $70,000 per year."

Advice: "Learn really good, strong programming techniques before specializing in a particular development language, and start thinking object-oriented."

Matt Beckius

Senior consultant, **Source Technology Corp.,** *Collegeville, Pa.*

Current work: Borland Delphi. Traditional two-tier client/server database applications, from low-level applications to "where maybe we're interfacing with hardware, data acquisition, manufacturing, insurance rating software."

Challenges: The learning curve. "A novice actually can use the tool and be fairly productive. But I guess there are places where you can get into trouble if you didn't really understand pointers and things like that."

Rewards: "Delphi gave us the ability to develop our own components — not only develop them for Delphi, but you develop them in Delphi."

Training: Self-taught, "train the trainer" programs offered by Inprise Corp.

Career effect: "More interesting" projects given the nature of the tool. "In the past four years, I've written a data mining engine for a pharmaceutical company. I've written an insurance rating engine. I've written software for manufacturing floors."

Salary impact: "A good, seasoned Delphi developer is going to bill anywhere from $85 to $150 an hour."

Advice: "If a person doesn't have any training with Delphi or Pascal, they should probably take a training class. Mentoring is always something that we recommend. But just go out and buy a copy."

Michael Bermudez

Principal software engineer, **Vital Software,** *Birmingham, Ala.*

Current work: Visual C++. Web-based projects. "What I essentially do is write server components that I run through [Microsoft Internet Information Server]."

Challenges: The learning curve. "As far as development with Visual C++ . . . it takes a little bit longer to do. It takes more detail."

Rewards: "Smaller executables, smaller Dynamic Link Libraries. They're faster. Essentially, you get access to everything that's out there that you can do in Windows NT and Windows 95. Since it is tied into Microsoft, all the latest technologies are integrated into it."

Training: College class and self-taught through using Microsoft foundation classes and active template libraries.

Career effect: Placed in higher demand, higher salary opportunities. "With my skills, I know that I can essentially walk anywhere that I want to and get well-paid."

Salary impact: "In line with what you read about at the national level."

Advice: "Take your time. It doesn't come easily. Once you get it, it will be well worth it." □

Linkins is a freelance writer in Austin, Texas. She can be contacted via E-mail at KPLinkins@aol.com.

IT CAREERS MIDWEST

SOFTWARE ENGINEER to design, develop, test, implement, maintain and support application software and Graphical User Interfaces for telecommunications industry clients using C, Motif, Shell scripts, System V IPC, xdb, SUN Workshop, purify, and quantify on UNIX and SUN OS platforms; Manage the documentation and source codes using CMVC. Require: M.S. degree (or equivalent) in Computer Science or an Engineering discipline, with two years of experience in the job offered. A B.S. degree with five years of progressively responsible experience will be considered equivalent to a M.S. degree. Extensive travel on assignments to various client sites within the U.S. is required. Salary: $75,000 per year, 8 am to 5 pm, M-F. Send resume to: Roz Alford, CEO, American Systems and Programming Company, Inc., 3495 Buford Highway, Duluth, GA 30097. Attn: Job KU.

Akshay Software International Inc., requires professionals with skills in the following:

1. Oracle, SQL Forms, Pro*C, PL/SQL, SQL Report Writer, UNIX
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3. Power Builder, PFC, SQL Server/Oracle.
4. Centura/Gupta SQL Windows, SQL Base/Oracle/ SQL Server/DB2
5. AS/400: RPG/400, COBOL/ 400, DB2/400 SYNON or EDI is plus
6. IBM M/F: COBOL, CICS, DB2, IMS, IDMS/ADSO, DB/DC, JCL.
7. DBAs: Oracle, SQL Server, DB2, IMS
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PROGRAMMER/ANALYST to analyze user requirements and design, develop, implement, test and maintain application software and related components in two- and three-tier client-server architecture using object-oriented programming, Oracle, MS Access, Lotus, MS Excel, ODBC, OCI, Visual Basic, Visual C++, MFC, Erwin and SELECT Enterprise on MS Windows and MS DOS platforms. Require: B.S. in Computer Science, with two years of experience in the job offered or as a Programmer. Salary: $55,000/year; 9 am to 6 pm M-F. Send resume to: Renga Nathan, President, Kanchi Incorporated, 154 Technology Parkway, Suite 200, Norcross, GA 30092. Attn: Job SM

Software Engineer (Pittsburgh, PA & other client sites). Research, analyze, design, re-engineer, & test client's application systems & subsystems in client/server architecture; write stored procedures & triggers. Environment: Windows NT: Oracle; Oracle Developer 2000; PL/SQL; SQL* Plus. Masters in Comp. Sci. or Math or Engg + 1 yr exp. $55,230/yr; 40 hr/wk; 8-5. Send resume to JO# 6022183; Mr. Richard Introcaso, Actg. Mgr., Beaver Cty Job Ctr., 120 Merchant St., Ambridge, PA 15003.

ENGINEER, Sr. Software: (Job site/interview: Stamford, Ct.) Design/Develop database class library in Visual C++ for loading data from ORACLE and replacing flatfile I/O with database I/O. Testing, debugging and development of software modifications for supply chain synchronization on Windows NT platform utilizing in-depth knowledge of Visual C++ and ORACLE RDBMS. Min. B.S. or B.Tech. in Computer Science plus 2 yrs. exp. in job offered or 2 yrs. related exp. within the computer programming industry. Must have exp. in applications development using Windows NT, HP-UX, AIX operating systems. Salary: $65,104/yr. 40 hrs./wk. Applicants will be required to present proof of legal authority to work in the U.S. Send resume and cvr. ltr. documenting min. qualifications to Job# 3226639. Program Support-3rd Floor, Conn. Dept. of Labor, 200 Folly Brook Blvd., Wethersfield, Ct. 06109.

MANAGER, FAX SOFTWARE DEVELOPMENT. Leads the design, development & testing of software products to automate the function of components of fax networks. Supports data network for long distance fax transmissions using digital data transmission techniques. Expands network capability to integrate voice, video & data. Must have Master of Science degree in Computer Engineering + 2 yrs exp, in same job or 2 yrs. exp. in a related occupation (Software Engineer in telecommunications software including network mgmt. protocol for problem solving & database support for all business applications). 40hrs M-F 8am-5pm $72,000/yr. Mail resume to: Bureau of Workforce Program Support, PO Box 10869, Tallahassee, FL 32302-0869. Job Order # FL 1883290.

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ENGINEER, Software (Environment Coordinator): (Job site/interview: Stamford, Ct.) Coordinate hardware/software environment needs of 30-40 developers. Plan and implement systems and middleware packages/libraries to build new applications utilizing in-depth knowledge of compilers, debugging tools, BUI front ends and communication protocols (TCP/IP, OSF/DCE and X/Motif. Min. B.S. or B.E. in Engineering plus 3 yrs. exp. in job offered or 3 yrs. related exp. within the computer programming industry. Must have exp. in applications development using UNIX, HP-UX, SUNOS operating systems, Parsing utilities, LEX and YACC. Salary: $65,104/yr. 40 hrs./wk. Applicants will be required to present proof of legal authority to work in the U.S. Send resume and cvr. ltr. documenting min. qualifications to Job# 3226653. Program Support-3rd Floor, Conn. Dept. of Labor, 200 Folly Brook Blvd., Wethersfield, Ct. 06109.

Senior Software Engineer: Design, develop & implement specialized software for Aviation Mgmt. Information System (AMIS-2000). Conduct research to improve the functionality of the system and develop algorithms for temporal data processing. Assist in the organization of an Asian Marketing campaign for company products. Min. req. incl.: MS in CS. Must have 6 mos. exp in advertised position, or 6 mos. exp. as a S.S.E. Computer Programmer or Data Analyst or related w/ability to: Program in C/C++, Java, Perl, HTML, SQL, ORACLE 8, Informix 7.x, & SQL Server DBMS. Must he able to build user-interface systems, develop client-servers, and de-bug programs. 40.0/hrs.wk, 8:00-5:00 $51,000/Yr. **Applicants send a resume to: Mr. George Andrews, 35111 U.S. 19 North #101, Palm Harbor, FL 34684**

Solutions Specialist wanted by S/ware Dvlpmt & Consulting Co. in Burlington, MA. Must have Bachelors in Economics or Comp Sci, Business or Economics w/significant coursework in Comp Sci & 2 yrs experience as S/ware specialist w/Cognos Business Intelligence Tools incl PowerPlay, Impromptu, Scenario & 4Thought. Respond by resume to: Job Order #4463, HR Dept, Cognos Corporation, 67 S. Bedford St, Burlington, MA 01803.

Systems Analyst wanted by Consulting Co. for Atlanta, GA location. Must have 1 yr experience creating specs for multi-functional acctg & fin'l applics; dsgng & dvlpg fin'l client/server, DSS & MIS systms. Bachelors in Comp Sci, Finance or Mgmt req'd. Respond by resume to: HR Dept, Technology Solutions Company, 205 N. Michigan, Chicago, IL 60601.

TECHNICAL CONSULTANT: Technical consulting for distributed computing at the systems level, particularly in the areas of advanced file systems, Distributed Computing (DCE), and On-Line Transaction Processing (OLTP) products. Create specifications, architect, design, implement, debug, and deploy large multiplatform systems. Provide on-site installation and configuration; develop large-scale transactional business applications for customers. Bachelor's degree in Computer Science or related field, along with 3 years of experience as a Technical Consultant required. Experience must include UNIX, C and networking protocols (including TCP/IP and/or SNA) on various platform environments. High mobility preferred. 40 hrs/wk, 8 am - 5 pm, $85,000/yr. Qualified applicants report/submit resume to James Mackin, Actg. Manager, Pittsburgh North Job Center, 1122 Western Avenue, Pittsburgh, PA 15233. Refer to Job Order 5022085.

Director, Applications Development - sought by Norwood, MA softw. mgmt. corp. to direct design, devel., implementation, support & maint. of Internet/ Intranet apps. design. Duties: manage Internet/Intranet apps. design, devel. & deployment using MS IIS, MS ASP, Visual Basic, HTML & MS - SQL Server; formulate E-commerce strategy & IT mgmt. team; implement & manage solutions w/clients & in-house bus. unit. Req'd: MS (or equiv. in educ. & exper.) in MIS, 3 yrs. progressively responsible exper. in apps devel. env., demo'd knowledge of & exper. w/Visual Basic, MS ASP, MS-SQL Server. Salary commensurate w/exper. 2 resumes to: ML Dunn, HR Manager, Corporate Software & Technology, 2 Edgewater Dr., Norwood, MA 02062-4637.

Account Manager needed by Reading, MA Co. involved in Production Data Mining S/ware, for mgmt of key projects & to cultivate long-term relationship w/corporate clients. Must have Masters in Electrical Engg & 2 yrs exp in Applications Dvlpmt training & education. Respond to: HR Dept, Datasage, Inc, 19 new Crossing Rd, Reading, MA 01867.

Programmer

Needed for NEA Provider system development and programming. Req. BS & MS/equiv. in CS/CIS; proficiency in VC++, Oracle and dbase on UNIX; exp. prel. comparable salary based - on exp. Contact Andy Montgomery, NEA Atl. at 2865 Amwiler Road, N.W., Atl., GA 30360-2827, Tel: 770-441-3203 x1102.

E-mail:
andy.montgomery@nea-fast.com

SOFTWARE ENGINEER needed F/T by Computer Services Co. in Edison, NJ. Must have 1 yr exp dsgng & dvlpg kernel level s/ware using Device Driver Kit (DDK) for Windows & dvlpg Windows s/ware using MSVC (MFC) & systm level debuggers. Masters in Comp Sci, Comp Engg or Elect. Engg req'd. Respond by resume to: HR Dept, Horizon Computers, Inc, 5 Lincoln Hwy, Edison, NJ 08820.

Knowledge Based Systems Engineer: to design, implement, and test advanced artificial intelligence and decentralized decision making system for the management and analysis of data related to Industrial Ergonomics and Occupational Safety and Health. Requires a Masters Degree in Computer Science with concentration in Knowledge Based Systems and/or Artificial Intelligence, plus 2 years experience in developing expert systems. Position located in Buffalo, NY and requires 20% travel. Send resume to Ergonomics Research Inc., P.O. Box 1294, Amherst New York 14226.

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Jr. Programmer Analyst (multiple positions) (varying job sites in Metro, St. Louis area) Design, development, coding and implementation of Web based Graphical User Interface (GUI) applications using C++, JAVA and HTML within a UNIX environment. $55,000/yr, 40 hrs/wk Mon - Fri. 8am - 5pm. REQD: Bachelor's Degree in Comp. Sci., Math, Engineering or MIS, plus 1 yr exp. in job offered. Send resume to Shirley J. Gregory, Missouri Division of Employment Security, 1411 Main Street, Kansas City, Missouri 64105. Must have proof of legal authority to work in the United States. AN EMPLOYER PAID AD, NO CALLS PLEASE! The Job Order # for the Job Opportunity is 128841.

Field Sales Engineer needed by Austin, TX Co. involved in dsgn & mftr. of s/ware & h/ware, to sell, demonstrate, configure Co.'s electronic instrumentation systms & s/ware using knowl of C & C++. Must have BS in Engg, Comp. Sci, Math or Physics. Respond to: Tammy Carter, National Instruments Corp., 6504 Bridge Point Pkwy, Austin, TX 78730.

SYSTEMS ANALYST (Oakbrook, IL): Design & develop data processing & info manag. systems, applications & databases using Oracle, C, C++, Uniface, SQL. Maintain client/server environ. & relational database. Determine system specifications. Analyze program specifications for completeness & conformance to standards. Design program logic to meet specifications & to adhere to prescribed standards using Oracle, C++, SQL, Uniface. Code program instruct. using SQL & Uniface. Prepare test data & test coded program to validate accuracy. Document all procedures used throughout the system. Master's in Bus. Adm/Info Syst or Comp. Sci. or Eng. & 2 yrs exp. required. Exp. must include: Oracle, C, C++, Uniface, SQL. 40 hrs/wk., 9a-5p. $49,899.20/yr. Must have proof of legal authority to work permanently in US. Send resumes to: IL Dept of Empl. & Security, 401 South State St - 7 North, Chicago, IL 60605, Attn. Shella Lindsey, Ref:# V-IL 19318-L. An employer paid ad. NO CALLS - send 2 copies of both resume and cover letter.

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TECHNICAL SPECIALIST

Provide technical direction and support in the acquisition, development, and ongoing maintenance of application or system hardware/software for Tandem computer system using TAL, TACL, Pathway & DSM; design complex system configurations; determine the impact of software changes on current systems, and recommend programs for applying new technology in the current environment; assist the system learns to apply quality assurance programs for effective development and enhancement; conduct system and technical reviews of system hardware, software, and human resources.

B.S. in Electronics Engineering or Computer Science required. Three years experience in the position or three years as a Systems Analyst required. Experience in related occupation must include design and development of applications for a Tandem computer system using TAL, TACL, Pathway and DSM.

40 hrs./wk; 8:15 a.m. – 5:00 p.m.; $65,000/year. Must have proof of legal authority to work permanently in the U.S.

Send 2 copies of, resume and cover letter to: **Illinois Department of Employment Security, 401 South State Street – 7 North, Chicago, IL 60605. Attn: Leonard Boksa, Ref. # V-IL-20127-B**. NO CALLS. AN EMPLOYER PAID AD.

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Design and develop telecommunication network software with the capability of toll switching and signaling for the NNS (Next Network Switch) project, using object-oriented technology, network systems, software testing, programming languages C, C++ and the UNIX operating system. Requires a Master's degree in Computer Science with experience using object-oriented technology, network systems, software testing programming languages C, C++ and the UNIX operating system. Applicant must also have one years experience in the job offered. 40 hours per week, M-F (work schedule: 8:15 am - 5:15 pm). Salary is $51,400.00 per year. Must have proof of legal authority to work permanently in the United States. Send resumes to: ILLINOIS DEPT. of EMPLOYMENT SECURITY, attn: Joan Breaux, 401 S. State St.-7 North, Chicago, IL 60605. Reference #V-IL 19123-N. NO PHONE CALLS. Send 2 copies of both resume and cover letter. An employer paid ad.

Software Engineer to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions; analyze, design, develop, test & implement various business s/ware applications on IBM mainframe using DB2, CICS, TSO, QMF, EDI, COBOL, SPUFI, NOMAD, ADVANTIS, SUPERTRACS & various other tools like DB2 tools, debugging tools (xpediter, intertest), library management tools (panvalet, elips), plan entire s/ware life cycle including user requirement study, planning, analysis, design, development, implementation & maintenance; required to use IBM mainframe application development s/ware & client-server development s/ware like Oracle (Pro*C, SQL*Forms, Procedures) & Unix; identify system bottlenecks & improve data access; Reqs. Master's in Comp. Sci., Computer, Electrical or Electronics Engg., Comp. Info. Systems, Comp. Applications, Mathematics or its foreign educ equiv, 3 yrs exp in job offered or 3 yrs related exp such as Sr. Programmer Analyst or Programmer Analyst. Will accept Bachelor's plus 5 yrs progressive exp in computer field in lieu of req'd educ & exp. Related exp must include developing, planning, designing, analyzing & implementing using CICS, DB2, TSO, COBOL, Oracle & Pro*C; $65/K, 40 hrs/wk, 8:30a-5p. Send resume to 7310 Woodward Ave., 4th Floor, Detroit, MI 48202. Ref. #168097 "Employer Paid Ad"

Systems Analyst - Analyze user requirements, procedures, and problems to automate processing or to improve existing computer system; develop environmental data management software, a multi-media based emissions tracking system that allows the users to model air, water/or solid waste emissions that leave the industrial facilities; and use neural networks, genetic algorithms, C, C++, GIS, Oracle and Sybase. Reqs: Bach. in Comp. Sci., Systems Analysis, Comp. Info. Systems, Comp. Engg., Electr. Engg., Electronic Engg., Mathematics or its equiv. in educ. and exp. plus 6 months exp. in the job offered or 6 months exp. in a related occup. as a Programmer, Programmer Analyst, Systems Analyst, Software Eng., Consultant, Grad. Research Asst. or Asst. Exec. Eng. Will accept 3 yrs. college educ. plus 3 yrs. exp. in the job offered or in a related occup. in lieu of the required educ. and exp. The 6 months exp. in the related occup. must have included developing, testing and analysis of environment software projects and using neural networks, genetic algorithms, C, C++, GIS and Sybase. M-F, 40 hrs/wk, 8a-5p, $38,865/yr. Send resumes to 7310 Woodward Avenue, 4th Floor, Detroit, MI 48202. Include Ref. #110197. "Employer Paid Ad"

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Successful candidate will be responsible for leading the research and implementation of state-of-the-art software using C/C++ and OLE/COM and managing the assigned product line marketing activities for PDA/PIM synchronization and related SW products. This position requires a graduate degree in Computer Science/Electrical Engineering plus 5-7 years of experience including product marketing or an equivalent combination of education and experience. An MBA is preferred. Expertise in full life cycle development and direct experience with underlying technologies and tools is necessary. Please send your resume to: Extended Systems, Human Resources Dept. RS, P.O. Box 4937, Boise, ID 83711 or fax to (208) 327-5011.
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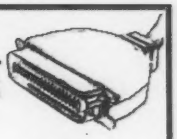

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Athome Corp.	20.9
Amazon.Com	17.4
Electronics For Imaging	15.4
Security Dynamics	13.8

DOLLAR

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Athome Corp.	11.56
Infoseek (H)	8.31
Lexmark International Group (H)	8.06
Yahoo! Inc.	7.75
Tellabs Inc.	7.63
AT&T (H)	6.88
Microsoft Corp. (H)	6.56

Losers

PERCENT

Hnc Software	-22.5
LM Ericsson	-19.7
Network Computing	-17.3
The Baan Co. N.V.	-14.7
SAP AG	-13.7
Renaissance Worldwide (L)	-13.5
Data General	-12.7
Cadence Design Systems	-11.3

DOLLAR

Hnc Software	-8.44
SAP AG	-5.63
LM Ericsson	-5.38
Motorola	-4.56
Motorola	-4.56
Pixar	-3.81
Cadence Design Systems	-3.44
ASM Lithography Holding	-3.31

INDUSTRY ALMANAC

Portal predictions

Amid the hype and hubbub of Internet stocks, Internet portal providers continue to see their share prices and market valuations go up. But, in the wake of the $4.2 billion purchase of Netscape Communications Corp. (Nasdaq:NSCP) by America Online Inc. (NYSE:AOL) on Nov. 24 [CW, Nov. 30] and the dominant position of Microsoft Corp.'s MSN.com, what's the future for these companies?

Internet portals are sites that act as gateways to other information and services on the Web. Former search engine companies such as Excite Inc. (Nasdaq:XCIT), Lycos Inc. (Nasdaq:LCOS) and Infoseek Corp. (Nasdaq:SEEK) are now considered portal companies.

These portal providers are still being recommended by many analysts, even though they have little or no cash flow (unlike AOL, none of these portals charges for their services) and still post losses each quarter.

Even Microsoft CEO Bill Gates told an audience last week at the Manhattan Institute that today's valuations of Internet stocks will prove to be "excessive." Should investors shy away from these portal providers and wait for AOL and MSN to take the market?

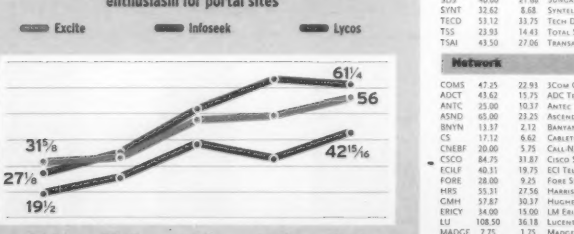
Analyst Mike Wallace at Warburg Dillon Reed in New York says no. He said a valuation of 10 to 15 times a company's sales is in line with many other companies in the Internet sector.

"Conventional wisdom says that there will be three or four major players, but that doesn't have to be the case," Wallace says. "Although the AOL/Netscape deal raises the bar, the No. 5 or No. 10 company can still make money."

— Laura Hunt

PORTAL MANIA

The AOL/Netscape deal has yet to dampen Wall Street's enthusiasm for portal sites



Exch	52-Week High	52-Week Low	Range	Dec. 11 Zpm	Wk Net Change	Wk Pct Change
Software					**UP 1.0%**	
ADBE	51.87	23.62	Adobe Systems Inc.	42.63	-1.75	-3.9
AZPN	56.87	6.12	Aspen Technology Inc.	11.38	-0.19	-1.6
ADSK	50.06	21.88	Autodesk Inc.	42.88	1.13	2.7
AVID	47.75	11.06	Avid Technology	22.50	0.75	3.4
BOOL	34.87	16.00	Boole & Babbage Inc.	29.88	0.13	0.4
CDN	39.00	19.12	Cadence Design Systems	27.00	-3.44	-11.3
CBTSY	63.87	6.68	CBT Group Plc.	16.38	6.44	64.8
CHKPF	47.75	10.87	Checkpoint Software Tech. Ltd.	35.25	-0.25	-0.7
CTXS	90.75	36.37	Citrix Systems Inc.	83.00	1.63	2.0
COGNF	30.50	14.75	Cognos Inc.	19.13	-0.94	-4.7
CA	61.93	26.00	Computer Associates Int'l, Inc.	42.06	-2.00	-4.5
CPWR	66.87	27.62	Compuware Corp. (H)	66.56	4.06	6.5
DCTM	59.62	16.75	Documentum	39.63	-2.13	-5.1
EFII	40.87	12.87	Electronics For Imaging	32.75	4.38	15.4
HNCS	47.12	22.50	Hnc Software	29.06	-8.44	-22.5
IDXC	55.75	30.00	IDX Systems	44.63	5.13	13.0
IFMX	10.43	3.50	Informix Software Inc.	8.13	0.56	7.4
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MANU	66.37	6.12	Manugistics Group Inc.	13.06	0.81	6.6
MENT	11.81	5.43	Mentor Graphics	8.66	-0.41	-4.5
MSFT	134.62	59.00	Microsoft Corp. (H)	132.50	6.56	5.2
NETA	56.87	25.50	Network Associates	52.84	1.78	3.5
CMH	57.87	30.37	Network General	37.94	-2.06	-5.2
NOVL	18.87	6.81	Novell Inc.	17.56	-0.25	-1.4
ORCL	37.25	17.75	Oracle Corp. (H)	36.38	0.38	1.0
PMTC	36.31	8.50	Parametric Technology Corp.	15.47	0.22	1.4
PSFT	57.43	18.37	Peoplesoft Inc.	18.81	-0.88	-4.4
PIXR	66.00	19.50	Pixar	39.44	-3.81	-8.8
PLAT	34.31	9.00	Platinum Technology Inc.	21.19	1.31	6.6
RATL	27.00	9.50	Rational Software Corp.	25.31	1.69	7.1
SAP	60.12	29.68	SAP AG	35.44	-5.63	-13.7
SCUR	22.25	6.37	Secure Computing Corp.	18.25	-2.00	-9.9
SE	50.25	20.12	Sterling Commerce Inc.	36.38	-0.50	-1.4
SSW	32.81	17.75	Sterling Software Inc.	25.13	-0.56	-2.2
SDRC	29.00	7.50	Structural Dynamics Research	17.69	0.63	3.7
SYBS	13.68	4.50	Sybase Inc.	7.50	0.38	5.3
SYMC	32.62	8.68	Symantec Corp.	19.94	-0.31	-1.5
SNPS	54.00	24.50	Synopsis (H)	52.31	3.44	7.0
SCTC	30.87	8.50	Systems & Computer Technlgy.	19.63	-0.75	-3.7
BAANF	55.50	9.50	The Baan Co. N.V.	10.13	-1.75	-14.7
VNTV	39.75	5.00	The Ventive Corp.	7.56	0.50	6.2
TSAI	43.50	27.06	Trans. Sys. Arch.	40.00	2.06	5.4
VRTS	65.00	23.75	Veritas Software Corp.	59.00	-1.00	-1.7
WIND	51.62	28.00	Wind River Systems Inc.	44.50	0.81	1.9
Telecommunications Carriers					**UP 2.2%**	
ATI	65.62	37.37	Airtouch Communications	57.31	-1.63	-2.8
AT	55.00	38.25	Alltel Corp. (H)	54.56	0.88	1.6
AIT	58.37	38.18	Ameritech Corp. (H)	57.19	0.38	0.7
ANDW	30.06	10.37	Andrew Corp.	17.81	1.06	6.3
T	72.25	48.37	AT&T (H)	70.06	6.88	10.9
BCE	46.62	25.62	BCE Inc.	34.56	-0.44	-1.3
BEL	58.87	40.43	Bell Atlantic	54.88	-1.44	-2.6
BLS	91.75	54.12	Bell South (H)	88.25	-1.13	-1.3
CSN	38.62	20.87	Cincinnati Bell Inc.	33.63	1.88	5.9
CMCSK	55.12	29.00	Comcast (H)	54.38	1.63	3.1
CQ	42.75	21.62	Comsat Corp.	37.50	0.94	2.6
COX	61.50	34.37	Cox Communications Inc.	59.00	4.69	8.6
GSTRF	37.12	8.31	Globalstar Telecom. Ltd.	18.44	0.00	0.0
GTE	67.43	46.56	GTE Corp. (H)	63.75	0.69	1.1
NXTL	34.12	15.37	Nextel Communications	21.81	-1.06	-4.6
SPOT	66.12	26.50	Panamsat	16.66	1.41	4.0
QCOM	66.00	37.75	Qualcomm	51.38	-2.63	-4.9
SBC	51.00	34.75	SBC Communications	49.19	-0.69	-1.4
FON	82.12	48.25	Sprint Corp. (H)	81.75	4.06	5.2
TCOMA	49.75	25.87	Tele-Communications (H)	47.56	5.50	13.1
TDS	50.12	30.62	Telephone And Data Systems	44.38	1.63	3.8
USW	64.50	43.37	US West	61.38	-2.50	-3.9
VIA	69.37	34.12	Viacom	67.75	3.13	4.8
WCII	48.12	10.25	Winstar Communications Inc.	30.88	1.38	4.7
WCOM	64.62	28.50	Worldcom Inc. (H)	63.31	2.25	3.7
Services					**UP 0.3%**	
ACXM	28.25	15.37	Acxiom Corp.	22.88	-0.63	-2.7
ACS	41.50	21.50	Affiliated Computer Servs (H)	40.94	0.63	1.6
AMSY	35.62	18.75	American Mgt. Systems (H)	35.56	3.31	10.3
AUD	84.31	54.06	Automatic Data Processing	76.44	-0.44	-0.6
BSYS	51.87	31.00	Bisys Group, Inc. (H)	50.06	0.69	1.4
CATP	58.37	13.37	Cambridge Technology Ptnrs	21.38	1.44	7.2
CEN	68.50	43.50	Ceridian	65.69	0.13	0.2
CBR	40.87	13.31	Ciber Inc.	21.63	-1.69	-7.2
CDO	23.25	12.43	Comdisco	16.88	-0.56	-3.2
CHRZ	53.50	17.25	Computer Horizons Corp.	22.38	1.38	6.5
CSC	74.87	37.50	Computer Sciences	65.38	5.13	8.5
DST	70.56	34.00	Dst Systems Inc.	54.81	0.44	0.8
EDS	50.87	30.43	Electronic Data Systems	42.88	3.25	8.2
FDC	36.06	19.68	First Data Group	26.00	-1.63	-5.9
FISV	49.37	28.37	Fiserv	45.63	-0.63	-1.4
IT	41.75	17.31	Gartner Group	20.69	0.63	3.1
HBOC	38.37	20.56	HBO & Co.	25.63	1.31	5.4
KEA	60.93	24.75	Keane	31.63	2.69	9.3
NDC	46.00	26.18	National Data	36.31	2.06	5.4
PAYX	55.06	26.75	Paychex, Inc.	48.38	-1.50	-3.0
REGI	31.75	5.93	Renaissance Worldwide (L)	6.59	-1.03	-13.5
REY	24.00	12.62	Reynolds & Reynolds	21.25	0.44	2.0
SFE	45.37	17.12	Safegard Scientifics	27.25	1.06	4.1
SAPE	62.00	24.25	Sapient Corp.	44.81	-0.94	-2.0
SMS	86.50	40.06	Shared Medical Systems	50.31	-2.06	-3.9
SDS	40.00	21.68	Sungard Data Systems	32.06	-2.00	-5.9
SYNT	32.62	8.68	Syntel Inc.	19.94	-0.31	-1.5
TECD	53.12	33.75	Tech Data	41.00	0.19	0.5
TSS	23.93	14.43	Total System Services, Inc	22.63	0.50	2.3
TSAI	43.50	27.06	Transaction Sys. Architects	40.00	2.06	5.4
Network					**OFF -1.3%**	
COMS	47.25	22.93	3Com Corp. (H)	43.88	1.25	2.9
ADCT	43.62	15.75	ADC Telecommunications Inc.	27.63	-0.31	-1.1
ANTC	25.00	10.37	Antec	17.13	0.56	3.4
ASND	65.00	23.25	Ascend Communications (H)	60.63	3.50	6.1
BNYN	13.37	2.12	Banyan Systems Inc.	7.28	0.31	4.5
CS	17.12	6.62	Cabletron Systems	8.38	-0.50	-5.6
CNEBF	20.00	5.75	Call-Net Enterprises	8.63	1.00	13.1
CSCO	84.75	31.87	Cisco Systems Inc. (H)	82.75	4.94	6.3
ECILF	40.31	19.75	ECI Telecom (H)	37.50	0.06	0.2
FORE	28.00	9.25	Fore Systems Inc.	17.69	0.13	0.7
HRS	55.31	27.56	Harris Corp.	36.50	-1.06	-2.8
GMH	57.87	30.37	Hughes Electronics/GM	37.94	-2.06	-5.2
ERICY	34.00	15.00	LM Ericsson	21.94	-5.38	-19.7
LU	108.50	36.18	Lucent Technologies	96.75	2.06	2.2
MADGF	7.75	1.75	Madge Networks	4.78	-0.03	-0.6
NCDI	13.75	4.37	Network Computing Dev	5.38	-1.13	-17.3
NWK	20.62	8.00	Network Equipment Tech.	11.25	-0.06	-0.6
NN	39.18	15.43	Newbridge Networks	28.38	-0.94	-3.2
NOK.A	110.43	31.62	Nokia Corp. (H)	107.69	-0.19	-0.2
NT	69.25	26.81	Northern Telecom. Ltd.	45.75	-1.00	-2.1
PAIR	24.37	6.00	Paircain Technologies Inc.	7.63	0.63	8.9
PCTL	11.93	4.75	Picturetel	6.06	-0.69	-10.2
SFA	27.93	11.75	Scientific Atlanta	20.13	-0.13	-0.6
SHVA	14.37	2.75	Shiva	5.75	0.00	0.0
TLAB	93.12	31.37	Tellabs Inc.	65.50	7.63	13.2
USW	64.50	43.37	US West	61.38	-2.50	-3.9
VRLK	11.18	2.87	Verilink	3.75	-0.31	-7.7
WSTL	15.75	2.75	Westell Technology Inc.	4.94	-0.56	-10.2
XYLN	31.31	9.62	Xylan	18.25	-1.63	-8.2
Semiconductors, Chips & Equipment					**OFF -1.5%**	
ADPT	43.50	7.87	Adaptec	18.94	2.13	12.6
AMD	32.75	9.31	Advanced Micro Devices (H)	30.06	-0.88	-2.8
ALTR	58.75	28.25	Altera	55.00	-0.25	-0.5
ADI	39.62	12.00	Analog Devices	26.44	-1.56	-5.6
AMAT	47.00	21.56	Applied Materials (H)	41.88	-1.00	-2.3
ASMLF	49.06	12.93	ASM Lithography Holding	28.38	-3.31	-10.5
HRS	55.31	27.56	Harris Corp.	36.50	-1.06	-2.8
INTC	124.00	65.65	Intel Corp. (H)	115.00	0.81	0.7
KLAC	48.00	20.75	Kla Instruments	41.50	-0.06	-0.2
LLTC	82.62	39.12	Linear Technology	75.47	-2.66	-3.4
LSI	29.37	10.50	LSI Logic	18.13	-1.00	-5.2
MXIM	45.50	22.31	Maxim Integrated Products	41.81	-1.13	-2.6
MU	55.37	20.06	Micron Technology (H)	48.44	0.63	1.3
MOT	65.87	38.37	Motorola	56.63	-4.56	-7.5
NSM	28.56	7.43	National Semiconductor	15.50	-1.38	-8.1
STM	91.75	35.87	Sgs-Thomson Microelectronics	74.13	1.50	2.1
SLR	74.93	28.87	Solectron Corp. (H)	71.19	0.69	1.0
TER	48.43	15.00	Teradyne	40.00	0.69	1.7
TXN	88.00	39.62	Texas Instruments (H)	80.13	0.00	0.0
UNPH	65.75	31.25	Uniphase	57.19	-2.94	-4.9
VTSS	46.37	15.81	Vitesse Semiconductor Corp.	44.50	3.50	8.5
XLNX	63.62	29.75	Xilinx (H)	56.31	-2.31	-3.9
Computer Systems					**UP 11.0%**	
AAPL	43.75	12.75	Apple Computer Inc.	32.75	-0.13	-0.4
ASPX	11.12	1.62	Auspex Systems	3.19	-0.25	-7.3
CPQ	43.18	22.93	Compaq (H)	41.06	2.94	7.7
DGN	21.81	7.00	Data General	18.00	-2.63	-12.7
DELL	73.50	18.81	Dell Computer Corp.	66.94	1.56	2.4
GTW	68.75	28.56	Gateway 2000 Inc.	53.38	1.38	2.6
HWP	82.37	47.06	Hewlett-Packard Co.	64.75	1.25	2.0
HIT	84.68	40.18	Hitachi Ltd.	60.19	-0.81	-1.3
IBM	170.56	95.62	IBM	166.13	2.31	1.4
MUEI	24.75	8.43	Micron	19.44	-1.25	-6.0
MOT	65.87	38.37	Motorola	56.63	-4.56	-7.5
NATI	36.50	17.50	National Instruments Corp.	30.25	1.13	3.9
NCR	40.31	21.50	NCR (H)	38.13	-0.63	-1.6
NIPNY	61.87	31.00	NEC	44.00	1.25	2.9
PRCM	16.00	3.50	Procom Tech Inc	10.88	-1.31	-10.8
SQNT	23.50	5.68	Sequent Computer Systems	11.06	-1.13	-9.2
SGI	16.50	7.37	Silicon Grafix	13.31	0.50	3.9
SNE	97.18	60.25	Sony	72.75	-1.81	-2.4
SUNW	82.50	34.62	Sun Microsystems	75.94	1.56	2.1
TEXM	5.00	2.00	Texas Micro	3.81	0.38	10.9
TRCD	4.87	0.37	Tricord Systems (H)	2.38	1.72	261.9
UIS	33.18	11.50	Unisys (H)	30.81	0.00	0.0
Internet					**UP 7.4%**	
AMZN	233.12	24.37	Amazon.Com	218.44	32.44	17.4
AOL	96.25	20.25	America Online	90.75	5.44	6.4
ATHM	75.25	20.50	Athome Corp.	66.88	11.56	20.9
CKFR	21.50	5.75	Checkfree	19.06	1.25	7.0
CHKPF	47.75	10.87	Checkpoint Software	35.25	-0.25	-0.7
CYCH	27.75	5.87	Cybercash, Inc.	14.75	0.06	0.4
EDFY	20.87	4.62	Edify Corp.	7.38	-0.81	-9.9
ECRP	35.25	10.00	E-Trade Group Inc.	27.13	3.25	13.6
XCIT	38.62	10.81	Excite, Inc. (H)	32.31	2.31	4.6
SEEK	49.00	7.75	Infoseek (H)	42.25	8.31	24.5
LCOS	68.75	15.00	Lycos, Inc.	55.63	3.13	6.0
NSCP	45.25	14.87	Netscape Communications	39.00	2.75	7.6
OMKT	29.12	4.25	Open Market, Inc.	13.44	2.94	28.0
OTEXF	23.50	9.50	Open Text Corp.	18.50	-0.50	-2.6
PSIX	21.93	4.25	Psinet	18.75	0.50	2.7
QDEK	3.00	0.25	Quarterdeck Corp.	0.51	0.00	0.6
SDTI	42.75	5.43	Security Dynamics	18.00	2.19	13.8
SPYG	32.25	4.06	Spyglass Inc.	20.00	-0.88	-4.2
YHOO	227.75	28.12	Yahoo! Inc.	192.56	7.75	4.2
Storage & Peripherals					**UP 0.0%**	
ADPT	43.50	7.87	Adaptec Inc.	18.94	2.13	12.6
APCC	46.25	22.12	American Power Conversion	41.81	1.56	3.9
CANNY	25.75	17.00	Canon Inc.	21.38	-0.31	-1.4
DBD	55.31	19.12	Diebold Inc.	35.38	0.88	2.5
EK	88.93	53.31	Eastman Kodak Co.	71.00	-2.06	-2.8
EMC	86.62	23.50	EMC (H)	80.63	2.19	2.8
IOM	14.62	2.93	Iomega	6.75	-0.69	-9.2
LXK	87.93	30.56	Lexmark International Gr. (H)	85.31	8.06	10.4
QNTM	26.81	10.81	Quantum	21.19	-1.25	-5.6
SEG	34.50	16.12	Seagate Technology	30.94	-1.00	-3.1
STK	51.12	20.12	Storage Technology	36.63	-2.25	-5.8
TEK	48.18	13.68	Tektronix	25.13	-0.56	-2.2
XRX	116.50	66.18	Xerox	107.00	-1.81	-1.7

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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How to contact Computerworld

TELEPHONE/FAX

Main phone number .....(508) 879-0700
All editors unless otherwise noted below
Main fax number .....(508) 875-8931
24-hour news tip line.....(508) 820-8555

E-MAIL

Our Web address is www.computerworld.com. All staff members can be reached via E-mail on the Internet using the form:
firstname_lastname@cw.com.

All IDG News Service correspondents can be reached using the form:
firstname_lastname@idg.com.

LETTERS TO THE EDITOR

Letters to the editor are welcome and should be sent to:
letters@cw.com.

Include your address and telephone number.

MAIL ADDRESS

PO Box 9171, 500 Old Connecticut Path,
Framingham, Mass. 01701

SUBSCRIPTIONS/BACK ISSUES

Phone .....(800) 552-4431
E-mail.....circulation@cw.com
Back Issues.....(508) 820-8167

REPRINTS/PERMISSIONS

Phone.....Ray Trynovich (717) 560-2001, ext. 24
E-mail.....sales@rmsreprints.com

CONTACTING CW EDITORS

We invite readers to call or write with their comments and ideas. It is best to submit ideas to one of the department editors and the appropriate beat reporter.

Editor in Chief Paul Gillin (508) 620-7724
Executive Editor Maryfran Johnson (508) 820-8179

Department Editors/News

News Editor Patricia Keefe (508) 820-8183
Sections Editor Kevin Fogarty (508) 820-8246
Assistant News Editor Michael Goldberg (508) 620-7789
Assistant News Editor Mitch Betts (202) 347-6718
Assistant Sections Editor Anne McCrory (508) 820-8205
Online Editor Johanna Ambrosio (508) 820-8553
Online News Editor Judith H. Bernstein (516) 266-2863
Industry Editor Joe Maglitta (508) 820-8223
West Coast Bureau Chief Galen Gruman (650) 524-7110

National Correspondent

IT services, systems integration, outsourcing Julia King (610) 532-7599

Senior Editors/News

Labor issues, IS careers Barb Cole-Gomolski (760) 728-8858
Network/systems management Cynthia Bournellis (650) 524-7112
Security, network operating systems Sharon Gaudin (508) 820-8122
IS management, year 2000, financial services Thomas Hoffman (914) 988-9630
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Client/server software, Unix applications Craig Stedman (508) 820-8120
Midrange hardware, Unix, mainframes Jaikumar Vijayan (508) 820-8220
Internetworking Bob Wallace (508) 820-8214

Senior Writers/News

Databases, data warehousing Stewart Deck (508) 820-8155
E-mail, groupware, document management Roberta Fusaro (508) 620-7776
PCs, servers, network computers, Windows April Jacobs (508) 820-8121
Federal government Patrick Thibodeau (202) 7[illegible] 9626

Staff Writers/News

New products, multimedia, storage Nancy Dillon (650) 524-7114
Computerworld online Tom Diederich (650) 524-7117
Telecommunications, mobile computing Matt Hamblen (508) 820-8567
Computerworld online Kathleen Ohlson (508) 820-8215
Application development, desktop applications David Orenstein (650) 524-7116

Opinions

Staff Columnist Frank Hayes (503) 252-0100
Columns Editor Galen Gruman (650) 524-7110

Department Editors/Features

Managing Allan E. Alter (508) 620-7714
Technology reviews/ Review Center James Connolly (508) 820-8144

Senior Editors/Features

Editor at large Gary H. Anthes (202) 347-0134
Features writer Kevin Burden (508) 620-7717
Review Center Cathleen Gagne (508) 620-7729
QuickStudy Stefanie McCann (508) 820-8274
Management Kathleen Melymuka (508) 628-4931
Managing Rick Saia (508) 820-8118
In Depth Steve Ulfelder (508) 620-7745
IT Careers David B. Weldon (508) 820-8166

Assistant Editor/Features

IT Careers Mari Keefe (508) 628-4906

Research

Laura Hunt, research analyst; Keith Shaw, graphics coordinator.

Copy Desk

Ellen Fanning, managing editor/production (508) 820-8174; Jamie Eckle, assistant managing editor/production; David Ramel, assistant managing editor/special projects; Pat Hyde, senior copy editor; Jean Consilvio, Mary Cresse, Tom Gaudet, Adam Parez, Bob Rawson, copy editors; Jeremy Selwyn, online production coordinator.

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Administrative Support

Linda Gorgone, office manager (ext. 8176); Connie Brown (ext. 8178); Lorraine Witzell (ext. 8139); Beliza Veras-Moriarty (ext. 8172); Chris Flanagan (650) 524-7111, editorial assistants.

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IT vets fight stigma

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certainly can find a place in the current labor market, employers looking down the road are concerned that those workers won't easily make the jump to bleeding-edge technologies. And that constitutes a big barrier.

"We don't care about the person's age, but we need people who can do the job," said Dennis Harrish, director of compensation at The Mead Corp. in Dayton, Ohio. But he acknowledged that because of increased work, "companies have become less willing to let [IT professionals] hone their skills on the job."

"Today, companies are not interested in training people when they are already paying top salaries," said Howard Rubin, chairman of the computer science department at Hunter College in New York.

HR BARRIER

Of course, older workers also have to get past youthful recruiters and human resources professionals, who may not appreciate the attributes of an experienced professional. "I often felt that if I could get past the first interview with the HR person, the IT department would hire me," said Larry Larsen, 57, who has hunted for work in IT the past few years.

Indeed, *Computerworld*'s survey results show that there are perceptions that older workers, though solid and experienced, are less flexible and creative than younger workers. Respondents used words such as *innovative, flexible* and *entrepreneurial* to describe younger workers; older workers were cited as being experienced, disciplined and loyal.

And though 72% of survey respondents said older IT professionals are more loyal than younger workers, the respondents also said older workers demand more money than their younger counterparts.

Experts said such perceptions prevent companies from tapping into the fastest-growing segment of the labor pool — workers over 40.

Still, it's hard to tell whether older IT workers are more likely to be jobless than their younger counterparts. The U.S. Bureau of Labor Statistics lumps computer scientists and mathematical scientists together for unemployment tracking. For that group, unemployment goes from less than 1% for workers aged 25 to 44 to almost 5% for those aged 55 to 64.

Attitudes about older IT employees

STATEMENT	AGREE	DISAGREE	NEUTRAL	DON'T KNOW/ NO ANSWER
Older IT employees are more likely to understand the need for stability and reliability in our computing infrastructure	81%	5%	14%	0%
Younger IT employees are less loyal to their employers	72%	11%	17%	0%
Younger IT job candidates are easier to recruit than older candidates	40%	28%	30%	2%

Base: 203 IT managers responsible for hiring IT staff

Source: Computerworld Information Management Group, Framingham, Mass.

LOTS OF REJECTION

Bill Lockhart, 61, said he also has experienced age discrimination in IT. After his job of 30 years at IBM was eliminated in 1993, he tried for a year to find work as a programmer in California's Silicon Valley. Though the bulk of his experience was with mainframes and minicomputers, he had done a lot of client/server programming and stayed current on newer operating systems, Lockhart said. Still, he collected "reams of rejection letters."

"The age discrimination was subtle," Lockhart said. "They didn't come right out and say, 'You're too old,' but I couldn't get past these young recruiters who thought I was just trying to make enough money to pay for my next vacation," he said.

After a year of hunting, Lockhart took a job as a travel agent. His IT career was revived about a year ago when he landed a job with a contracting company that was doing year 2000 work.

Another IT professional, who lives in the Boston area, had trouble finding work and claimed that firms are looking for "kids who will work 14 hours in a sweatshop." Also, young hiring managers are intimated by older workers who may know more than they do, he added.

"Companies are also afraid that you'll demand too much money," said Larsen, a Web page designer who found himself looking for work in the Sunnyvale, Calif., area about three years ago. He had been making more than $100,000 per year at his old job as a product engineer for a semiconductor company. That figure turned off prospective employers, Larsen said. "I told them I would work for a lot less money, but I don't think they believed me," he added.

Clearly, at some companies, there's actually a preference to hire older IT workers, if IT managers could only find them.

"Where are all these [older IT workers?]" asked Joe Smialowski, who recently took the CIO job at BankBoston. He said that in his previous role as CIO at Sears, Roebuck and Co., he didn't see a glut of older candidates in the market.

Alex Tanasescu, director of MIS at Cupertino Electric in Sunnyvale, Calif., said he also values older IT workers. "If I have the choice and the talent is equal, I will lean toward hiring the older person because of their level of experience," Tanasescu said. □

Older IT workers get call to arms

Bill Payson says age discrimination is a luxury that companies won't be able to afford in the near future. That's not a surprising view from the 75-year-old founder of The Senior Staff 2000, a Campbell, Calif.-based job network of year 2000 experts age 50 and older.

This week, Payson will form a new venture, called Senior Techs, charged with creating an army of about 10,000 older IT workers with a broad range of skills. Payson said he started the company because so many IT workers have been laid off and say they can't get new jobs because of age discrimination.

"Companies are complaining of an IT shortage, but there are a lot of technical workers who have been downsized, laid off or fired because they are growing older," Payson said. If firms want to keep IT jobs filled, they will have to turn to that segment, he said.

Sheldon Steinhauser, associate professor of sociology at The Metropolitan State College of Denver, agreed.

"Economic realities will force people to step over their [age] prejudices," Steinhauser said. There simply won't be enough younger workers to go around, he said.

Both Payson and Steinhauser said adding older workers to IT will mean changes for companies.

For example, Payson said, many older workers are more interested in part-time positions than full-time jobs. Also, older workers relate better to people with similar experience. "Don't have a bunch of twentysomethings training older employees," Payson said. — Barb Cole-Gomolski

NETWORKING

LAN telephony matures, but benefits remain elusive

By Bob Wallace

ALTHOUGH LAN-based telephony may, as vendors claim, be the wave of the networking future, some users don't see much benefit to riding that wave.

Nonetheless, 3Com Corp. in Santa Clara, Calif., and Siemens AG in Munich, Germany, last week formed a $100 million joint venture to develop LAN telephone and multimedia products, some of which will ship next year.

The products include hybrid switches, LAN telephones and gateways that let users run voice over LANs designed to let them integrate existing voice and data networks in their buildings.

STELLA JOHNSON

"I'm definitely not in any hurry to replace my PBX, because it works very well." – Will Weider, CIO, Trinity Regional Health System

NOTHING TO FIX

"There's a risk in converging voice and data networks today because nothing is wrong with the status quo," said Glenn Gabriel Ben-Yosef, president of Clear Thinking Research Inc. in Boston. "So why would an IS manager put his job on the line without a massive payoff? The big payoff is for small companies with 30 to 80 employees."

Some LAN telephony products obviate the need for traditional private branch exchanges (PBX), many of which are still on the books and perform well. Users have expressed a strong reluctance to phase out or replace those voice systems [CW, Nov. 9].

"I'm definitely not in any hurry to replace my PBX, because it works very well," said Will Weider, CIO at Trinity Regional Health System in Rock Island, Ill.

"It'd be great to have one network, but we have separate voice and data infrastructures. If we started all over again, we'd evaluate [a converged network]," Weider said. "[But] the technology is still in its infancy."

Vendors are aware of the PBX issue. "[Companies] with PBXs that aren't fully depreciated will not likely be decommissioning them any time soon," acknowledged Ron Sege, a senior vice president at 3Com Enterprise Systems. "[And] we expect small businesses to be among the early adopters."

Another issue that 3Com and Siemens will have to address involves management control of converged networks. That's because many large companies still have separate information technology and telecommunications departments.

"It's one significant impediment to market acceptance," Sege said. □

Sun opens up Java licensing

By Carol Sliwa
NEW YORK

SEEKING TO SILENCE critics, Sun Microsystems Inc. last week took steps to open its Java licensing and development models.

The Mountain View, Calif., company unveiled here a new "Community Source License" that will let anyone use, modify and share source code without an up-front fee. It also will change its development process to permit nonlicensees to help shape extensions to the programming language.

Although users, analysts and vendors viewed the news as a move in the right direction, many remain confused about the details. And some said Sun needs to go further, turning over Java's stewardship to a standards body.

"I think it's important that it not be controlled only by Sun. That'll keep things from fragmenting, and it'll avoid what we saw starting to happen with Microsoft and Hewlett-Packard going off and doing their own versions," said Jeffry Borror, information technology director at Daiwa Securities America Inc. in New York.

Calling the World Wide Web Consortium a good model for managing a standard via a group, Bob Offutt, a research and development vice president at The Sabre Group, the travel and transportation technology division of AMR Corp. in Fort Worth, Texas, said, "I don't sense that [a comparable] forum exists today with Sun."

STEVE BORNS

The Sabre Group's Bob Offutt: World Wide Web Consortium is a good model for managing a standard

Yet Sun last week demonstrated that it's loosening its grip. The company now will allow nonlicensees to participate and even lead certain aspects of the development process under the watchful eye of New York-based auditor PricewaterhouseCoopers LLC.

For instance, Xilinx Corp., a chip maker in San Jose, Calif., will head a test effort to develop an application programming interface in the boundary scan market.

Sun's chief operating officer, Ed Zander, even appeared to resolve one contentious issue when he said IBM would lead development of a real-time extension to Java — critical for embedded devices. But another Sun executive, Jim Mitchell, said the new formal process must be executed before any technical leads are set.

Another source of confusion for many vendors is which Java class libraries they will be allowed to freely modify.

Mitchell listed four — java.lang, java.util, java.io and java.net — and said there will be a few more that will be determined later. Sun fears that turning over core parts of Java might lead to incompatible versions, Mitchell said.

Sun is removing the requirement that innovations to the Java source code be returned to Sun. But people who ship binary-code products still must have a support agreement with Sun that provides training on compatibility test suites, and they still must pay a royalty fee on any software they ship — which has been a concern for some vendors.

But for most corporate developers, that won't be a burning issue. "We don't want to dive into the source code of the [Java virtual machine]. We want to focus on the business logic," said Michel Dauphin, head of IT architecture at Banque Generale du Luxembourg. □

Staff writer David Orenstein contributed to this report.

App servers are a bit tricky, but deliver on Java promise

By David Orenstein
NEW YORK

SLOWLY, PARTLY because the technology is evolving, users are starting to believe that Java application servers can make application development easier. Some testified at the Java Business Expo here last week to the benefits of a prebuilt middle tier.

For example, developers at insurer Reliance Group Holdings Inc. in New York struggled for years to build an online policy submission and clearance application before using Java and Mount Laurel, N.J.-based Bluestone Software Inc.'s Sapphire/Web application server, said Fred Kauber, director of Reliance's Internet and electronic-commerce efforts. That final effort took just six months.

STEVE BORNS

Bass Hotels & Resorts' Eric Pearson used Java to revamp his Web site but not as an application server

Bluestone's application server, like many, provides services such as load balancing, object caching and integration with legacy business logic. Companies often have had to write much of that infrastructure themselves. "The application server minimized the need to do a lot of that custom code," Kauber said.

Application servers also make middleware and component infrastructure easier to work with, said Anne Thomas, an analyst at Patricia Seybold Group in Boston. That's particularly important as more complex technologies such as Common Object Request Broker Architecture find their way to the middle tier, she said.

Citibank Mortgages in St. Louis prefers to use the best tools to suit each application infrastructure need, said Scott Preble, assistant vice president of information services. Once, that would have forced the company to integrate the software itself. But now, Sun Microsystems Inc.'s NetDynamics application server has made that easier, Preble said. "We're betting Citibank Mortgage on a Java application server," he said.

Despite the successes, some elements of Enterprise Java Beans, which provide a popular component model for application servers, aren't yet certain.

For example, NetDynamics won't support Enterprise Java Beans until some time in the next four months. And Inprise Corp. in Scotts Valley, Calif. — one of several vendors to announce an application server at the expo — will only be beta-testing its Enterprise Java Beans support then. A reference implementation of Enterprise Java Beans won't be released by Sun until the end of next year.

Some users seemed in no hurry to buy application servers because they're happy with the infrastructure they have.

For example, Atlanta-based Bass Hotels & Resorts, which owns the various Holiday Inn brands, used Java to revamp its Web site for the hotels. But the company didn't use an application server because, at the time, few were available and because the needed infrastructure was not overly complicated, said Eric Pearson, senior director of emerging technologies.

And The Chase Manhattan Corp., one of the nation's largest banks, developed a homegrown application server when it rebuilt several in-house applications with Java. The New York-based bank has no need now to replace that with an application server, said Keith E. Carpenter, vice president of client access systems. □

Senior editor Carol Sliwa contributed to this story.

Java upgrade too slow

CONTINUED FROM PAGE 1

most two years and released in beta form to licensees last Friday.

"Most of us doing Java don't actually expect it to be equal to C or C++ any time soon," said Jeffry Borror, director of information technology at New York-based Daiwa Securities America Inc. "But what I would like to see is 50% of the speed of optimized C or C++ code. And we are seeing those types of numbers with the HotSpot benchmarks that Sun has provided."

STEVE BORNS

Daiwa Securities America's Jeffry Borror: Java probably won't be equal to C or C++ any time soon

Sun's tests show that the HotSpot virtual machine will make Java run 70% faster than it does on the Java 2 platform using Symantec Corp.'s just-in-time (JIT) compiler, said Sun Vice President Jon Kannegaard. HotSpot — which Sun officials now claim will ship in April — looks for performance bottlenecks as a Java program is executing and optimizes performance on the fly.

Sun's benchmarks for the new Java 2 platform with the Symantec JIT compiler running on Windows NT show a modest performance boost — 10% to 20% — on the server, but the client is not faster, Kannegaard conceded.

Meanwhile, developers have been improvising. Southern California Gas Co. (SoCalGas), for instance, substitutes Symantec's JIT compiler for the native compiler in its application server.

To speed transactions, both SoCalGas and Daiwa Securities also have taken some code out of Java and pushed it into stored procedures in the database. "It's a trick we've done for years in the C++ world, and it's a lot more necessary in the Java world on the server side," Borror said.

J. P. Morgan & Co. in New York uses Java only for the client presentation layer. The intense data processing is done in C, said Douglas Gardner, a vice president at J. P. Morgan.

Application design that takes full advantage of Java's object-oriented model is critical to making applications run faster, said Anne Thomas, an analyst at Patricia Seybold Group in Boston. With Java, "you need to partition applications better" into multiple tiers, she said. □

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The Back Page

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Dispatches & images from the fringes of the electronic frontier

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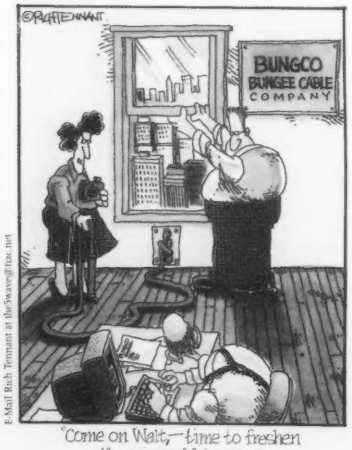
THE FIFTH WAVE *by Rich Tennant*



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Inside Lines

Where lawyers come from

Remember Heathkits? Microsoft lawyer Steven Holley does, and he wanted to use the assemble-it-yourself hobby kits to make a point about old technology at Microsoft's antitrust trial last week. But all he did was take government expert David Farber down memory lane. "I loved Heathkits," Farber said. "It motivated a generation of bright students . . . to go into electrical engineering." "It was a great disappointment to my father that I didn't do that," Holley replied. "Well, some people go bad," quipped Farber, whose son graduated from law school last week. "Just to make it clear, my son went bad that way, too."

Mangia!

Showing its true Italian roots, the U.S. subsidiary of shoemaker Bruno Magli piled on the food last week to help get its workers through the go-live portion of an SAP project — breakfast, lunch and dinner. "It seems to make it go a little easier if you're chewing on something," said Henry Cadmus, director of operations at Bruno Magli USA, whose SAP saga is detailed on page 4. "But I have enough pizza and Chinese food in me to last for a while."

First things first

General Motors may be five months into a complete overhaul of its users' desktops worldwide, but the car maker hasn't forgotten where the rubber meets the road. Eventually, users will get new operating systems and applications, said Dennis Walsh, chief information technology officer at GM. But first: new Web browsers for everyone. "We couldn't have users without browsers for the next two years," Walsh said.

Not everyone's fantasy

You'd think the Victoria's Secret Web store would be a dream project for electronic-commerce developers. But it wasn't so dreamy for the women-led team at women-owned Resource Development Inc. that put it together. Some of the content was "hard for some of us to swallow," said President Nancy Kramer. Case in point: A model posed with a laptop wearing sexy lingerie and stiletto heels. "And the laptop is connected to nothing!" Kramer complained. Cracked a female developer at the firm: "Cellular modem."

Fin de siecle

Tired of the IT labor shortage? San Francisco online employment service BridgePath.com suggests nontraditional sources of workers: retirees, former welfare recipients and . . . ex-criminals? . . . Unhealthy optimism: The U.K.'s National Health Service asked suppliers to sign a "deed" confirming they "will not be affected by any year 2000-related problems." . . . Barbra Streisand canceled a Madison Square Garden gig on New Year's Eve 1999, saying she wants to do "as little traveling as possible" at year 2000 time, reports the New York *Daily News*. Possible replacements: Streisand impersonators or maybe the timeless Rolling Stones.

Overheard

Peter Burrows, chief technology officer at Reebok, on the lack of outside consultants working on its SAP project: "I'm partnerless. That's why we can go so fast. I don't have all this overhead to bring along with me." . . . Charlie Kears, general manager at the Fess Parker Winery and Vineyard in Los Olivos, Calif., hearing that 5,000 IBMers suddenly would be working for AT&T: "I'll be darned. I thought slavery was over."

Last week, we told you about the Museum of Modern Art and its fight with the Message-Oriented Middleware Association over having "moma" in its domain name. The trade group wants you to know that its coming name change (to the International Middleware Association, at www.imwa.org) wasn't sparked by the art museum's threats. Fair enough. News editor Patricia Keefe isn't changing her name or her game — collecting your news tips and tidbits sent her way. E-mail her at patricia_keefe@cw.com or call (508) 820-8183.

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When we take on a problem, we really get into it. Because we know we can make a positive difference. For example, California's welfare system was quickly becoming overwhelmed by the massive amount of paperwork involved in processing each new applicant. But one of our teams worked around the clock to deploy a solution. Now, eligibility is determined in only hours and applicants can have an assistance check the same day. We may lose a little sleep solving problems. But sometimes it means waking up to a better world.
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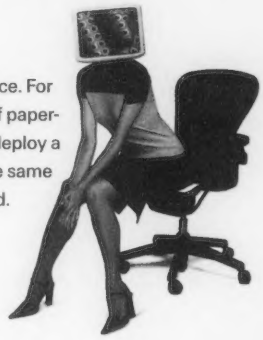

UNISYS We eat, sleep and drink this stuff.